

DOCUMENT RESUME

ED 416 079

SE 061 115

TITLE The Environmental Education Collection: A Review of Resources for Educators. Volume 1.

INSTITUTION North American Association for Environmental Education, Troy, OH.

ISBN ISBN-1-884008-55-0

PUB DATE 1997-00-00

NOTE 127p.

AVAILABLE FROM North American Association for Environmental Education, P.O. Box 400, Troy, OH 45373; phone: 937-676-2514.

PUB TYPE Books (010) -- Book/Product Reviews (072)

EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.

DESCRIPTORS Conservation Education; *Curriculum Enrichment; Ecology; *Educational Resources; Elementary Secondary Education; *Environmental Education; *Hands on Science; Interdisciplinary Approach; Learning Activities; Multimedia Materials; Rainforests; Recycling; Science and Society; Science Education; Wildlife

IDENTIFIERS Stewardship

ABSTRACT

This book is designed to help educators find curricula, multimedia resources, and other educational materials that can enhance the teaching of environmental education in a variety of settings. Curriculum materials included in this compendium were evaluated using a set of guidelines developed by the North American Association for Environmental Education (NAAEE). These guidelines highlight six key characteristics of high-quality environmental education materials: (1) fairness and accuracy; (2) depth; (3) emphasis on skills building; (4) action orientation; (5) instructional soundness; and (6) usability. The first section of this resource guide details approximately 50 environmental education curriculum materials. Entries are listed alphabetically and each contains a summary of the curriculum; information about grade level, subject areas, author, publisher, and price; comments specific to the six key characteristics; and a sample of quotations from the reviewers' evaluation sheets. The second section contains an annotated listing of support materials. Following this section is a matrix that cross-lists all of the materials and their various characteristics. Curriculum materials cover such subjects as recycling, environmental chemistry, geology, biodiversity, deforestation, butterflies and other insects, rainforests, wetlands, and agriculture. (PVD)

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The Environmental Education Collection: A Review of Resources for Educators Volume I



North American Association for
Environmental Education

The North American Association For Environmental Education

NAAEE is a network of professionals and students working in the field of environmental education throughout North America and in over 50 countries around the world. For more than 25 years, the Association has promoted environmental education and supported the work of environmental educators.

There are many environmental interest groups and many organizations dedicated to the improvement of education. NAAEE combines and integrates both of these perspectives and takes a positive, cooperative, nonconfrontational approach to promoting education about environmental issues.

The Association is made up of people who have thought seriously — over lifetimes — about how people become literate concerning environmental issues. NAAEE members believe education must go beyond consciousness-raising. It must prepare people to think together about the difficult decisions they have to make concerning environmental stewardship, and to work together to improve and solve environmental problems.

NAAEE recognizes the need for a coherent body of information about environmental issues. Its members also recognize that information and analysis are only part of an effective education program. To be truly effective, this body of knowledge must be integrated into all aspects of the curriculum and into all types of educating institutions for the widest array of audiences.

In order to translate theory into reality and provide tangible support for environmental education and environmental educators, NAAEE engages in a variety of programs and activities: The annual conference at varying North American sites, an active publications program, the Environmental Education Training Institute, the VINE (Volunteer-led Investigations of Neighborhood Ecology) Network, the Environmental Issues Forums (EIF) program, NAAEE Skills Bank, and the Environmental Education and Training Partnership (EETAP).

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web site: <http://eelink.umich.edu/naaee.html>



The Environmental Education Collection: A Review of Resources for Educators

Volume I



**North American Association for
Environmental Education**

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The Environmental Education Collection - A Review of Resources for Educators Volume 1 represents the third in a series of documents published by the North American Association for Environmental Education as part of the National Project for Excellence in Environmental Education.

National Project for Excellence in Environmental Education

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Acknowledgments

The Environmental Education Collection - A Review of Resources for Educators Volume 1 is the result of a collaborative effort among the National Project for Excellence in Environmental Education, the World Wildlife Fund, and the North American Association for Environmental Education. This document could not have been produced without the support and leadership provided by Judy Braus, Director of Environmental Education and Betty Olivolo, Senior Environmental Education Specialist of the World Wildlife Fund and Ed McCrea, Executive Director of the North American Association for Environmental Education.

Special thanks to the teachers, curriculum developers, educational administrators, environmental education specialists, business and industry representatives, and environmental scientists who took time from their busy schedules to review the curriculum materials. We would also like to express our gratitude to Dilip Das, Manager of Youth Programs of the Morton Arboretum, and Susan Dahl, Education Specialist of the Leon M. Lederman Science Education Center, Fermi National Accelerator Laboratory for hosting review sessions.

This project has been funded by the United States Environmental Protection Agency's Environmental Education Division.

The contents of this document do not necessarily reflect the views and policies of EPA nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Additional funding and support for this project has been received from the Environmental Education and Training Partnership (EETAP), the National Fish and Wildlife Foundation, World Wildlife Fund, the National Environmental Education and Training Foundation, and Northern Illinois University.

Additional copies of this book can be obtained from the NAAEE Publications and Membership Office, P.O. Box 400, Troy OH 45373, USA
Phone and fax: (937) 676-2514 e-mail: jthoreen@igc.apc.org
web site: <http://eelink.umich.edu/naaee.html>

ISBN # 1-884008-55-0

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Table of Contents

Title	Page Number
Introduction.....	1
Why Environmental Education?.....	1
How Was The Environmental Education Collection Developed?.....	2
The Review Criteria.....	2
Summary Of The Guidelines.....	3
Using The Environmental Education Collection.....	4
How To Use This Collection.....	5

Reviews

Acid Rain: Teacher's Guide.....	8 - 9
Always a River: Supplemental Environmental Education Curriculum.....	10 - 11
Aquatic Project WILD: Education Activity Guide.....	12 - 13
At Home With The Sun: Solar Energy for Young Scientists.....	14 - 15
Biodiversity Basics: An Educator's Guide to Exploring Biodiversity.....	16 - 17
Biology on a Shoestring.....	18 - 19
Building Block Chemistry.....	20 - 21
A Child's Place in the Environment: Caring for Aquatic Systems.....	22 - 23
A Child's Place in the Environment: Protecting Soil.....	24 - 25
Community Connections: An Interdisciplinary Urban Environmental Education Curriculum.....	26 - 27
Conservation Biology.....	28 - 29
The Cycles for Science Series: Curriculum Supplements.....	30 - 31
Discover A Watershed: The Everglades.....	32 - 33
EM*Power! Environmental Management Power Leader's Guide.....	34 - 35
Energy, Economics & The Environment: Case Studies and Teaching Activities for Middle School.....	36 - 37
Environmental Chemistry.....	38 - 39
Environmental Education in the Schools: Creating a Program that Works...	40 - 41
Environmental Science Field Laboratory.....	42 - 43
Getting to Know the Waters of Yellowstone: An Educator's Guide.....	44 - 45
Global Environmental Change Series: Biodiversity & Deforestation.....	46 - 47
Global Systems Science Series.....	48 - 49
The Great Ocean Rescue.....	50 - 51
How Nature Works: HELP (Habitat Ecology Learning Program)	52 - 53
Investigating and Evaluating STS: Issues and Solutions.....	54 - 55
Learning About Insects.....	56 - 57
Let's Reduce and Recycle: Curriculum for Solid Waste Awareness.....	58 - 59
Living Lightly In The City: An Environmental Education Guidebook-Volume I.....	60 - 61
Living Lightly On The Planet: A Global Environmental Education Guidebook - Volume II.....	62 - 63

Magical Migrating Monarchs: A Program to Enhance Awareness of our Interactive Role in the Environment.....	64 - 65
Native American Gardening: Stories, Projects and Recipes for Families.....	66 - 67
Oceanography for Landlocked Classrooms.....	68 - 69
On Safari: Animals and Their Habitats.....	70 - 71
Pablo Python Looks At Animals.....	72 - 73
Pond and Stream Safari: A Guide to the Ecology of Aquatic Invertebrates..	74 - 75
Project Learning Tree: Environmental Education Activity Guide.....	76 - 77
Project Seasons: Hands-on Activities for Discovering the Wonders of the World.....	78 - 79
Project WET: Curriculum & Activity Guide.....	80 - 81
Project WILD K-12: Activity Guide.....	82 - 83
Rainforest Researchers.....	84 - 85
The San Diego Zoo Presents... The Animals!.....	86 - 87
Science Sleuths Volume I: The Mysteries of the Blob and the Exploding Lawnmower.....	88 - 89
Sea Search.....	90 - 91
SimFarm: School Edition.....	92 - 93
Terrarium Habitats: Teacher's Guide.....	94 - 95
Understanding Earth.....	96 - 97
Understanding Environmental Health Risks: Teacher's Manual.....	98 - 99
A World In Our Backyard: A Wetlands Education and Stewardship Program	100 - 101
WOW! The Wonders of Wetlands: An Educator's Guide.....	102 - 103

Reviews In Brief

The Amazon Trail.....	106
Discover The World: Empowering Children to Value Themselves, Others and the Earth.....	107
Ideas For Environmental Education: In the Elementary Classroom.....	108
Imagine A Green Tomorrow: A Visual Learning Environmental Project Guide.....	109
The Kid's Guide To Service Projects: Over 500 Service Ideas for Young People Who Want to Make a Difference.....	110
Likeable Recyclables: Creative Ideas for Reusing Bags, Boxes, Cans, and Cartons.....	111
Marine Biology: An Introduction to Ocean Ecosystems, Student Book.....	112
Science in the Marketplace.....	113
Simple Things You Can Do To Save Energy: The Power is in Your Hands.....	114
Songbird Story.....	115
Curriculum Matrix.....	116 - 119
Feedback Forms.....	121 - 122

W elcome! With literally thousands of education materials to select from, knowing which ones may be the best for a particular group of students can be a daunting task. *The Environmental Education Collection — A Review of Resources for Educators (Vol. 1)* is designed to help educators find curricula, multimedia resources, and other educational materials that can enhance teaching environmental education in a variety of settings. It is our hope that this resource guide will assist educators as they plan, develop, and implement creative and effective environmental education programs.

The Environmental Education Collection is intended to be the first in a series of resource guides. Each of these guides will provide background information and reviews of some of the most widely available environmental education materials. A companion piece, *The Biodiversity Collection — A Review of Resources for Educators*, is being developed by World Wildlife Fund. *The Biodiversity Collection* includes information on environmental education curriculum materials and resources with a focus on biodiversity.

Why Environmental Education?

Environmental education is effective education. Environmental education is learner-centered, providing students with opportunities to construct their own understandings through hands-on, minds-on investigations. Learners are engaged in direct experiences and are challenged to use higher-order thinking skills. Environmental education supports the development of an active learning community where learners share ideas, expertise, and prompt continued inquiry. Environmental education provides real-world contexts and issues from which concepts and skills can be learned.

Environmental education recognizes the importance of investigating the environment within the context of human influences, incorporating an examination of economics, culture, political structure, and social equity as well as natural processes and systems. Ultimately, the goal of environmental education is to develop an environmentally literate citizenry. Through comprehensive, cohesive programs, learners:

- explore how feelings, experiences, attitudes and perceptions influence environmental issues
- become knowledgeable about natural processes and systems
- gain an understanding of human processes and systems
- are able to investigate and analyze environmental problems and issues using a variety of techniques
- use basic science and math skills, and explore the nature of bias
- develop a sense of their rights and responsibilities as citizens
- are able to understand the ideals, principles, and practices of citizenship in our democratic republic
- possess the skills necessary for citizenship

Environmental education often begins close to home, encouraging learners to forge connections with and understand their immediate surroundings. The awareness, knowledge, and skills needed for these local connections and understandings provide a base for moving out into larger systems, broader issues, and a more sophisticated comprehension of causes, connections, and consequences.

For each environmental issue there is not just one right answer or solution—there are many perspectives and much uncertainty. Environmental education cultivates the ability to recognize uncertainty, envision alternative scenarios, and adapt to changing conditions and information.

These knowledge, skills, and habits of mind translate into a citizenry that is better able to address its common problems and take advantage of opportunities, whether environmental concerns are involved or not.

How Was *The Environmental Education Collection* Developed?

In order to collect a broad range of educational materials (e.g., curriculum guides, CD-ROMs, laser discs, video tapes), letters were sent to commercial publishers, not-for-profit organizations, government agencies, and other organizations that produce environmental education curricula asking them to submit materials for the review. Curriculum guides and other educational materials included in *The Environmental Education Collection — A Review of Resources for Educators* were evaluated by teams of classroom teachers, content experts, and environmental educators. Each set of materials was reviewed by at least three people. In those cases where reviewers disagreed, the materials were evaluated by at least one more person. Quite obviously, it would not be practical to review all of the environmental education curriculum materials that have been produced. Consequently, the materials included in this resource guide represents a small sample of resources available.

The Review Criteria

Curriculum materials included in this compendium were evaluated using the *Environmental Education Materials: Guidelines For Excellence* developed by the North American Association for Education for Environmental Education (NAAEE). The *Guidelines* provide a set of criteria for developing and selecting environmental education materials. These guidelines aim to help developers of activity guides, lesson plans, and other instructional materials produce high quality products, and to provide educators with a tool to evaluate the wide array of available environmental education materials. Developed through a process of critique and consensus, the *Guidelines for Excellence* are grounded in a common understanding of effective environmental education. Over 1000 individuals and organizations (e.g., teachers, educational administrators, environmental scientists, curriculum developers) participated in its development.

The *Guidelines for Excellence* point out six key characteristics of quality environmental education materials. For each of these characteristics, some guidelines are listed for environmental educators to follow. Finally, each guideline is accompanied by several indicators, which suggest ways of gauging whether the materials being evaluated or developed follow the guidelines. A complete set of the *Guidelines For Excellence* can be ordered from the NAAEE Publications and Membership Office in Troy, Ohio.

Summary of the Guidelines:

#1 Fairness and accuracy: EE materials should be fair and accurate in describing environmental conditions, problems, and issues, and in reflecting the diversity of perspectives on them.

- 1.1 Factual accuracy
- 1.2 Balanced presentation of differing viewpoints and theories
- 1.3 Openness to inquiry
- 1.4 Reflection of diversity

#2 Depth: EE materials should foster an understanding and appreciation of environmental concepts, conditions, and issues, as appropriate for different developmental levels.

- 2.1 Focus on concepts
- 2.2 Concepts in context
- 2.3 Attention to different scales

#3 Emphasis on skills building: EE materials should build lifelong skills that enable learners to address environmental issues.

- 3.1 Critical and creative thinking
- 3.2 Applying skills to issues
- 3.3 Action skills

#4 Action orientation: EE materials should promote civic responsibility, encouraging learners to use their knowledge, personal skills, and assessments of environmental issues as a basis for action.

- 4.1 Sense of personal stake and responsibility
- 4.2 Self-efficacy

#5 Instructional soundness: EE materials should rely on instructional techniques that create an effective learning environment.

- 5.1 Learner-centered instruction
- 5.2 Different ways of learning
- 5.3 Connection to learners' everyday lives
- 5.4 Expanded learning environment
- 5.5 Interdisciplinary
- 5.6 Goals and objectives
- 5.7 Appropriateness for specific learning settings
- 5.8 Assessment

#6 Usability: EE materials should be well designed and easy to use.

- 6.1 Clarity and logic
- 6.2 Easy to use
- 6.3 Long lived
- 6.4 Adaptable
- 6.5 Accompanied by instruction and support
- 6.6 Make substantiated claims
- 6.7 Fit with state or local requirements

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Using The Environmental Education Collection

As a set of review criteria, the *Guidelines for Excellence* offer a standard to aim for when considering materials, and a set of ideas about what a well-rounded environmental education curriculum might be like. It is not reasonable to expect that all environmental education materials will follow all of the guidelines. For example, a set of materials might not present differing viewpoints, as outlined in guideline #1.2. This shortcoming does not necessarily mean that the materials should not be used. An instructor could work them into a larger set of activities that explores different viewpoints and helps learners discern opinion and bias in individual presentations of the issue. Likewise, a curriculum project that focuses on the science behind water ecology might not include a discussion of social issues, but may still be used effectively as a science resource within a larger unit on water-related issues.

The write-ups of the materials included in *The Environmental Education Collection — A Review of Resources for Educators* were designed to point out the variety of factors an educator may wish to consider when deciding which materials are most appropriate for a particular group of students and how those materials might be used most effectively. Of course, no set of evaluations can be complete, and there are bound to be important considerations missing. Although the reviewers made a valiant effort to evaluate the materials using their professional judgement and their best understanding of the *Environmental Education Materials: Guidelines for Excellence*, it should be understood that the reviews are not perfect. Given this, the intent is that *The Environmental Education Collection — A Review of Resources for Educators* should be used as a tool to inform decisions, contributing to more effective environmental education.

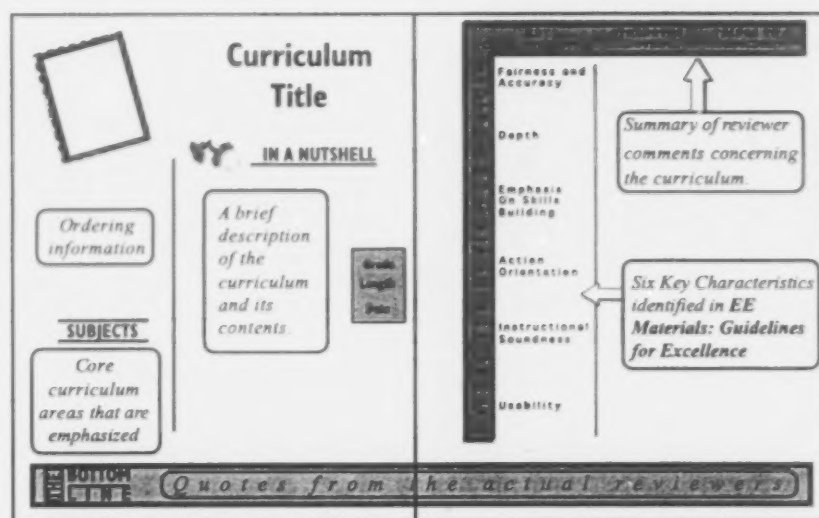
Here are a few more things to keep in mind as you review the write-ups:

- The reviewers tried to highlight the strengths, but also point out weaknesses or constraints that they felt other educators would want to know about before purchasing a resource. It is important to point out that what one reviewer might consider a weakness, another might consider a strength. At the same time, some reviewers felt more strongly about some issues than other reviewers. Just keep in mind that the write-ups are meant to guide you and that you need to read the entire review to get a feel for the curriculum.
- If the materials were not designed to meet one of the key characteristics, the reviewers noted that in the write-up.
- Each item reviewed in this compendium was produced by an organization, agency, business or other institution that has its own goals, mission, and agenda. Many different kinds of organizations produced outstanding materials and all materials contained a certain perspective—just by the emphasis on certain subjects, activities, values, and methods.

- The key to effective education lies with educators. That is why a mix of resources have been included. Educators can use this guide as a tool to select the materials that will help them build educationally sound units and programs.
- As much information as possible was included to help users find and order the materials. However, items such as prices, phone numbers, and addresses will change often. If you find an error, please let us know.
- The major subject focuses, based on the review, are also included.

How To Use This Collection

The first section of the resource guide highlights approximately 50 environmental education curriculum materials. Entries are listed in alphabetical order. Each entry contains a summary of the curriculum (In a Nutshell), information about grade levels, subject areas, author, publisher, and price, comments specific to the six key characteristics (What the Reviewers Said!), and a sample of quotations from the reviewers' evaluation sheets (The Bottom Line). The second section contains an annotated listing of support materials. Following this section is a matrix that cross lists all of the materials and their various characteristics (e.g., grade level(s), topics covered, subjects). Finally, we have included a short "Feedback Form." Since we plan to produce future volumes in this series, we would appreciate your input.

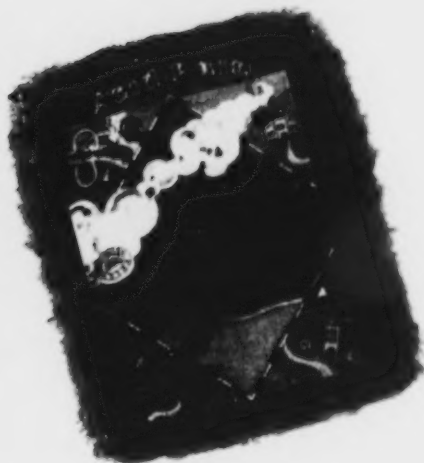


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Reviews

The following materials were reviewed using *Environmental Education Materials: Guidelines for Excellence*. The synergy between the various parts — the summary of reviewer comments, the subjects, the brief description of the curriculum, and the actual quotes of the reviewers — creates the richness and integrity of the reviews. It is strongly recommended that educators read both pages of each review in order to take in the full flavor of the curriculum.

The following reviews are provided to allow individual educators to make their own decisions about the materials and to determine how they can best be used.



Acid Rain

Teacher's Guide



IN A NUTSHELL

Great Explorations in Math
and Science (GEMS)
Lawrence Hall of Science
University of California,
Berkeley
Berkeley, CA 94720-5200

phone: (510) 642-7771
fax: (510) 643-7309
website: www.lhs.berkeley.edu

Cost: \$16.00

SUBJECTS

Mathematics

Science

This book presents an eight-lesson curriculum on the topic of acid rain. Students engage in activities that lead them to: delve into the issue of acid rain, generate possible solutions, critically evaluate those solutions, and then formulate their own opinions about what should be done. The program culminates in a town hall role-play where students portray characters with different points of view and attempt to reach commonly acceptable solutions. The unit is structured in fifty minute lessons with a variety of activities, frequent homework assignments for students, and preparation instructions for teachers. Also includes summary outlines to help organize lessons; data sheets consisting of homework assignments and class handouts; "Going Further", a collection of eight extension activities; and a list of additional resources. Instructors without a background in science or ecology can reference "Behind the Scenes" for background information. Encourages teachers to learn along with their students.

Grade Level
6-10

Length
164 pages

Date Published
revised in 1994

*Data Sheets are also available in Spanish.

THE **BOTTOM**
LINE

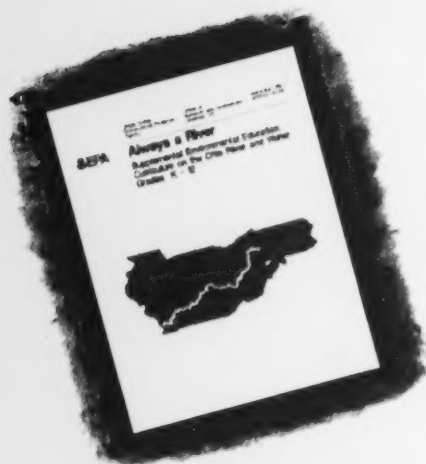
"Just about any teacher wanting to do a unit on acid rain can successfully pull it off with this book and some diligent homework."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	THINGS TO CONSIDER
Fairness and Accuracy	Helps students search out answers and form opinions. Uses and references primary sources. Utilizes guided discussion and encourages critical assessment of secondary sources of information.	Scientific information may need updating. May not give sufficient attention to challenges faced by industries.
Depth	Logical progression of concepts and skills. Considers local, national and global scales.	Needs stronger social science component.
Emphasis On Skills Building	Encourages group skills, oral and written communication, critical thinking and "thinking like a scientist". Students must collect and organize data and derive conclusions.	
Action Orientation	Discusses national and international effects of issue. Empowers students by addressing importance of citizen involvement in decision making.	Does not address how students can affect changes on their own.
Instructional Soundness	Uses variety of methodology (discussion, role playing, cooperative learning). Encourages students to build upon prior knowledge. Makes good use of case studies.	Activities are primarily designed for indoor use.
Usability	Activities are very clear with detailed instructions. Time requirements, homework, and additional resources are included. Provides clear visuals and all needed handouts.	Limited suggestions for adapting materials. Binding inhibits copying. Requires significant preparation time if teacher is unfamiliar with topic.

"Information was explained thoroughly but not too technically."

"...Does a good job of making acid rain less intimidating for educators to teach...
All in all, a good resource on a pretty technical topic."



Always a River

Supplemental Environmental Education Curriculum on the Ohio River and Water



IN A NUTSHELL

U.S. Environmental
Protection Agency
Office of Research
& Development
26 W Martin Luther King Drive
Cincinnati, OH 45268

phone: (513) 569-7772
Reference # AWBERC-91-09

Cost: Free of charge.

SUBJECTS

Fine Arts
Economics
Health
Language Arts
Mathematics
Science
Social Studies

This is a series of interactive, interdisciplinary, hands-on activities designed to engage students in investigating the Ohio River and its importance to the states through which it flows. The four units focus on: 1) the Ohio River as part of a total ecosystem, 2) physical, chemical and biological aspects and significance of water, 3) human use of the Ohio River and its impacts on the watershed, and 4) the Ohio River's influence on historical cultures and modern life. Each unit features background information, resources for teachers, and activities. The 58 activities are identified and cross-referenced by grade level, duration, setting, subject, skill, vocabulary, procedure, and extension or evaluation. Illustrations include maps, charts, and drawings of aquatic animals and tracks. Material includes worksheets, a glossary, a chapter on field ethics, suggestions for interviewing people, and instructions for establishing and maintaining an aquarium.

Grade Level

K-12

Length

284 pages

Date Published

1991

**THE BOTTOM
LINE**

"Variety is just OK."

"This one could be adapted for any river system."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Prepared and reviewed by numerous educators and other professionals from the local, state and national levels.

Depth

Ties together environmental, historical, cultural and economic concepts.

Emphasis On Skills Building

Addresses careers and responsibilities. Provides opportunities for developing a number of skills.

Action Orientation

Few activities promote action; emphasis on action is stronger in extension exercises.

Instructional Soundness

Promotes a variety of teaching methods. Many activities take place out of doors. Goals, objectives and appropriate subjects are listed for each activity.

Usability

Well organized, logically written. Includes evaluations, extensions, resources, vocabulary, skills, durations, etc. for each activity.

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"Would be a good supplement to a river clean-up/monitoring program."

"Very lengthy, but comprehensive, curriculum."



Aquatic Project WILD: Education Activity Guide



IN A NUTSHELL

Council for Environmental
Education

5430 Grosvenor Lane
Bethesda, MD 20814

phone: (301) 493-5447

fax: (301) 493-5627

email: natpwild @igc.apc.org

Cost: Distributed in training
workshop which is free or requires
a minimal charge.

SUBJECTS

Fine Arts

Health

Language Arts

Mathematics

Science

Social Studies

Aquatic Project WILD is a part of the *Project WILD* series focusing specifically on water issues, aquatic life forms, and habitats. It is based on the premise that young people and their teachers have a vested interest in learning about the earth as home for people and wildlife, and addresses the need for human beings to develop as responsible members of the ecosystem.

The forty interdisciplinary activities in this guide are arranged in seven sections by themes, which include awareness and appreciation, ecological principles, issues and actions.

They consist of simulations, games, explorations, experiments and field trips. Activities are designed to be integrated into existing curricula or study units. Illustrated with photographs, drawings, diagrams and masters for handouts and worksheets. Appendices include a glossary, index, metric conversion chart, conceptual framework, and suggestions for field trips, interviewing, and field ethics.

Grade Level

K-12

Length

242 pages

Date Published

1995

THE **BOTTOM**
LINE

"These exercises employ simple ideas, yet they are inexpensive and fun to do."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Addresses controversial issues with role playing, simulations and critiques of printed material.

Only two activities under "People, Culture & Wildlife".

Depth

Includes a detailed conceptual framework. Local to global concepts are addressed in the activities.

Context and links to 'big picture' could be more clearly explained.

Emphasis On Skills Building

Lists skills for each activity. Most activities develop creative thinking skills.

No opportunities for long-term studies or monitoring.

Action Orientation

Encourages learners to reflect on actions and consequences. Includes a list of environmental organizations. Emphasizes personal responsibility.

Provides few examples of successful environmental interventions or opportunities for "real world" actions (as opposed to simulations).

Instructional Soundness

Activities build on previous knowledge. Encourages use of a variety of instructional methods and settings. Goals and objectives are defined in terms of learner outcomes.

Usability

Workshops are available to provide additional support for teachers. Provides suggestions for inexpensive materials and methods.

Could benefit from more graphs and charts.

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"Sign up for the workshop. It is well worth 6+ hours of time to get this resource."

"A great tool for teachers both inside and outside the classroom."



At Home With The Sun: Solar Energy for Young Scientists



IN A NUTSHELL

Written & Illustrated by:
Michael J. Daley

Professor Solar Press
RFD#3 Box 627
Putney, VT 05346

Cost: \$7.95

SUBJECTS

Science
Social Studies

This brief book introduces students to solar energy, the role of the sun in providing energy in nature, and human use of solar power throughout history and today. The text explains some of the basic physics of solar energy (e.g. light reflection, use of glass in greenhouses) and the history of human energy consumption, and goes on to describe solar water heating systems and photovoltaic cells. The activities provide opportunities to experiment with solar energy models. Projects include constructing a pizza box solar oven, making a greenhouse out of a shoebox, turning a soda can into a model hot water heater, and determining the student's own energy use. Most of the activities can be completed using common household materials. Text is in large print with simple vocabulary, and includes drawings and a glossary.

Grade Level

K-6

Length

32 pages

Date Published

1995

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**THE BOTTOM
LINE**

"Put together like an 'infomercial' that's trying to sell the idea of solar energy."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Does not list sources of information. Presents only positive aspects of solar power.

Depth

Includes information from different nations. Addresses historical, cultural, economic and environmental aspects. Has unifying theme with logically connected concepts.

Emphasis On Skills Building

Allows for some critical and creative thinking, e.g. data collection, drawing conclusions from observations, developing extensions to experiments.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Connects with learners' lives in terms of energy use. Allows learners to build on previous knowledge. Activities are hands-on.

Usability

Materials are inexpensive, accessible, easy to use. Emphasizes safety.

BEST COPY AVAILABLE

"At Home with the Sun is a collection of short, easy to do projects, good for filler work or as a unit to understand solar energy."

Biodiversity Basics:

An Educator's Guide to Exploring Biodiversity



IN A NUTSHELL

Edited by: Judy Braus

World Wildlife Fund
1250 24th Street NW
Washington, DC 20037

phone: (202) 778-9669

Cost: Not determined.

SUBJECTS

Economics
Language Arts
Science
Social Studies

Biodiversity Basics is the introductory curriculum module to World Wildlife Fund's *Windows on the Wild (WOW)* program. This module introduces biodiversity by addressing the following questions: What is biodiversity; why is biodiversity important; what is the current status of biodiversity; and what are people doing to help protect biodiversity? The material includes an introduction to the WOW program, background information on biodiversity for educators and students, about three dozen interdisciplinary teaching activities, activity sheets, suggestions for involvement in community service, guidelines for planning action projects, a glossary, and lists of resources. Activities examine the nature and significance of biodiversity, investigate its link to global sustainability, and attempt to teach students how to take appropriate and responsible action to protect it. Each activity contains an overview, objectives, materials, vocabulary, subjects, procedures, extension ideas, resources and suggested assessment strategies.

Grade Level
Middle School
Length
unavailable
Date Published
1998

**THE BOTTOM
LINE**

"A comprehensive, creative, well-written set of activities for understanding the issues associated with global biodiversity."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Accurate, well-referenced, balanced approach to issues. Represents multiple perspectives. Student are encouraged to draw their own conclusions from information.

Depth

Comprehensive background information. Presents concepts in historical, social and economic contexts. Represents variety of scales from local to global.

Emphasis On Skills Building

Encourages critical and creative thinking. Students observe, collect data, analyze, compare, infer, draw conclusions, and use problem-solving skills.

Some activities are more challenging than others and include more of a focus on critical and creative thinking skills.

Action Orientation

Strong emphasis on both individual and group action.

Instructional Soundness

Interdisciplinary, learner-centered, relevant to students' lives. Provides for a variety of learning styles. Includes objectives and assessment strategies.

The majority of the activities are designed for indoors.

Usability

Well organized, clear, logical, and well-written. Adequate background information. Includes resource sections.

Panel reviewed a draft. Final artwork not included.

BEST COPY AVAILABLE

"This is an excellent resource. There is so much usable material that is informative, interesting, and creative."

"I wish I had been taught using such interactive and thought-provoking materials!"



Biology on a Shoestring



IN A NUTSHELL

Edited by: Mary Louise Bellamy
& Kathy Frame

National Association of
Biology Teachers
11250 Roger Bacon Drive # 19
Reston, VA 20190-5202

phone: (703) 471-1134
fax: (703) 435-5582
e-mail: NABTer.aol.com
internet: <http://www.nabt.org>

Cost: members \$29.00
non-members \$35.00

SUBJECTS

Science

Biology on a Shoestring is a collection of investigations and hands-on activities designed to be used by teachers and students who do not have access to expensive scientific equipment or who feel a need to 'demystify' science by using inexpensive or familiar resources. The write-ups for each of the fifteen labs features a sidebar listing the objective, connections to subject areas, length of lab, materials needed, and preparation time required. Also provided for each are a synopsis, objective, teacher background, instructions for students, worksheets and answers to student tests. Illustrations are charts, tables and black and white drawings. The text includes numerous appendices, references and suggested readings, and suggestions for both setup and teaching strategies. Activities involve such topics as acid rain, taste and smell, levers in skeletal structures, decomposition of leaves, and invertebrate behavior under different circumstances.

Grade Level

9-12

Length

248 pages

Date Published

1995

**THE BOTTOM
LINE**

"Wonderful source of open-ended biology labs. Thinking and working like a scientist! These could be springboards for other ideas."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Reviewed and written by named experts.

Does not consistently portray all perspectives. Some information is dated.

Depth

Depth is provided in specific laboratory experiments.

Labs are focused on particular issues/questions and do not cover connections to other areas.

Emphasis On Skills Building

Provides opportunities for using critical and creative thinking skills. Allows students to design and carry out their own experiments.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Materials are learner-centered, hands-on, and constructivist.

Usability

Suggests adaptations for differently-abled students. Lists sources for activity materials.

"A very nice biology curriculum module."

"Individual units could be used by the teacher in conjunction with other activities and materials."



Building Block Chemistry

Chlorine Can Bring Chemistry to Life & Building Blocks of Our World: Chlorine



IN A NUTSHELL

Chlorine Chemistry Council
1300 Wilson Blvd.
Arlington, VA 22209

phone: (703) 741-5829
web site: <http://c3.org>

Cost: No charge

SUBJECTS

Health

Science

Material reviewed included *Building Blocks of Our World: Chlorine*, a six minute videotape, and *Chlorine Can Bring Chemistry to Life*, consisting of two reprinted articles about chlorine, a black and white poster chart showing chlorine chemistry and uses, and both teacher and student materials for a two-day unit on chlorine. The course aims to teach awareness of chlorine in the students' world, and to give students a chance to experiment with different chlorine compounds to determine common properties. The material presents chlorine, along with eleven other key elements, as one of the "building blocks" which make up all other compounds and molecules. Two of the activities give students the opportunity to observe chemical reactions and involve the use of microscopes, thermometers and test tubes. Teacher materials include a statement of objectives, safety notes, teaching strategies, data table, background and answers to questions.

Grade Level

9-12

Length

12 pages

Date Published

1993/94

THE **BOTTOM**
LINE

"Good instruction and support material."

"If one were to use this material, one would have to supplement materials on hazards of chlorine."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	THINGS TO CONSIDER
Fairness and Accuracy	Accurate information on chlorine chemistry and uses of chlorine in everyday life.	Does not address possible negative aspects of chlorine.
Depth	Touches on health and economic contexts for study of chlorine. Encourages awareness of chlorine in daily products.	Video says too little about chlorine chemistry and misses opportunity to use graphics and film to explain chemical properties.
Emphasis On Skills Building	Demonstrates use of chlorine in chemical testing.	Does not encourage students to compare, contrast, or analyze.
Action Orientation	N o t A p p l i c a b l e	
Instructional Soundness	Makes connections to everyday lives. Module uses variety of activities: video, poster, discussion, lecture, lab activity.	
Usability	Materials are concise, logical, easy to use, long-lived. Provides instruction and support material for teacher. Can be adapted into an existing unit.	

"No open-minded person doubts the usefulness of chlorine compounds. But there are risks associated with their use, too. Admit it - bring it out - discuss it and let the students decide."



A Child's Place in the Environment

Caring for Aquatic Systems



IN A NUTSHELL

Principal Writer: Olga N. Clymire

Lake County Office of
Education
1152 South Main Street
Lakeport, CA 95453

phone: (707) 263-7249
fax: (707) 263-0197

Cost: \$55.00

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

This is the fourth part of a six-unit teaching guide developed by the California Department of Education. The purpose of this guide is to provide elementary school teachers with an example of an interdisciplinary, thematic environmental education program. "We strive to balance our use of water to meet the needs of all living things" is the unifying concept in the activities of this particular unit. The twenty lessons are divided further into four subconcepts. The curriculum provides extensive information for teachers, such as materials lists, time lines, reference materials, tips for facilitating cooperative learning, suggestions for teaching outdoors, and ideas for assessment and evaluation. The curriculum also includes worksheets, study materials, photographs and other illustrations, songs, games, and stories. Data sheets are available in Spanish and English.

Grade Level
4th

Length
412 pages

Date Published
1994

**THE BOTTOM
LINE**

"It is impressive for a 4th grade manual that action skills are stressed... Often, these activities are only stressed for junior high and high school."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Identifies sources of information and curriculum designers. Represents varying sides of issues and helps students explore differing values and conflicts.

Some content may come across as "gloomy" if not balanced or presented properly.

Depth

Explores issues in local and continental perspectives. Different natural science concepts are represented. Activities relate concepts to students' lives.

Emphasis On Skills Building

Involves students in critical thinking, data collection, definition of issues. Develops citizenship skills.

Action Orientation

Encourages students to examine water use in their own lives and to get involved in water use issues in their community.

Instructional Soundness

Employs variety of teaching methods and assessment types. Encourages students to participate in and reflect on process and content of learning.

Some vocabulary may not be age-appropriate.

Usability

Lessons are clearly written. Resources, references and professional development programs are listed. Materials are adaptable to international settings, are reusable and are available in more than one language.

Layout of activities is cumbersome. Background information is given at the end.

BEST COPY AVAILABLE

"Material contains many opportunities for students to see different sides to an issue and to begin forming their own opinions and solutions to problems."

"The materials do an excellent job of introducing water concepts."



A Child's Place in the Environment

Protecting Soil



IN A NUTSHELL

Principal Writer: Olga N. Clymire
Lake County Office of
Education
1152 South Main Street
Lakeport, CA 95453

phone: (707) 263-7249
fax: (707) 263-0197

Cost: \$45.00

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

This is the second of a six-unit environmental education teaching guide developed by the California Department of Education. This unit focuses on soil and is built around four subconcepts: soil is made up of living and non-living things; soil supports life and life enriches soil; people depend on soil; and people can choose to enrich and conserve soil. There are twenty lessons, each with a sidebar identifying ties to earlier lessons, concepts, subconcepts, an overview of the lesson, time required, vocabulary, curricular connections, and the scientific thinking processes. Many lessons also include a section entitled "Background Information for the Teacher." Among the supplies are graphs, charts, diagrams, and copies of handouts and transparencies. There is a section on teacher preparation along with seven appendices covering teaching methods, materials list, vocabulary, tips on teaching values and teaching outdoors, sources of additional materials, and multilingual/multicultural considerations. Data sheets are available in Spanish and English.

Grade Level

2

Length

311 pages

Date Published

1994

**THE BOTTOM
LINE**

"Learners explore in depth complexities of environmental issues... grappling with identifying/developing their own values is a major emphasis."

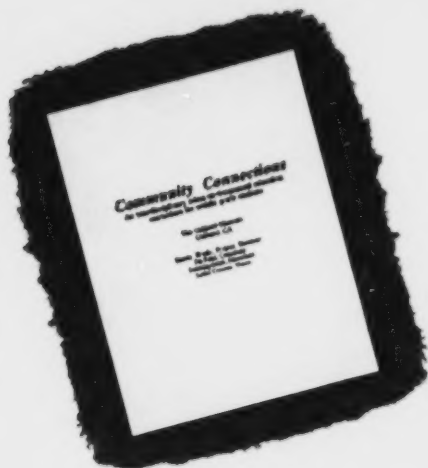
What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	THINGS TO CONSIDER
Fairness and Accuracy	Clearly details who developed materials and documents factual information. Appendix discusses teaching of controversial issues. Encourages inquiry.	
Depth	Nice buildup from narrow, local scale to broader, global scale. Explores issues from many angles and contexts.	
Emphasis On Skills Building	Encourages creative thinking, questioning and decision making. States necessary skills at beginning of lesson.	
Action Orientation	Encourages parents to participate in conserving soil. Highlights "Action" and "Motivation" for the teacher.	Sets up numerous experiments, but provides few activities which follow through in the 'real world'.
Instructional Soundness	Promotes cooperative learning. Uses several different teaching techniques. Many lessons involve out-of-classroom activities. Uses assessment in every lesson.	Seems to assume that all students learn at the same pace.
Usability	Very well written and teacher friendly. Follows a coherent outline, with each lesson including the same key concepts. Provides multicultural and bilingual consideration.	

BEST COPY AVAILABLE

"There is information on how soil can be enhanced and protected and on how it can be destroyed without pointing fingers at any groups."

"Activities seem simple enough for second grade, yet are interesting and challenging."



Community Connections

An Interdisciplinary Urban Environmental Education Curriculum



IN A NUTSHELL

Project Director: Sandy Bredt

The Oakland Museum
1000 Oak Street
Oakland, CA 94607

phone: (510) 238-6305

Cost: \$11.91 for Oakland Classes,
\$14.07 outside of Oakland.

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

Community Connections is an interdisciplinary curriculum unit that seeks to help students explore their role in and interactions with their environment. This four-week program helps students define, recognize and build their local community. Through the twenty four activities, students focus on three fundamental principles: 1) every community has niches to be fulfilled, and organisms capable of filling them; 2) every community is a web of interdependent relationships, and 3) every community needs diversity. Students engage in numerous discussions, surveys and action projects. Activities are cross-referenced and are drawn from social studies, science, mathematics, language arts and visual and performing arts, and include journaling, drawing, experimenting and participating in field trips. Materials include student pages as well as a list of instructions and resources for teachers.

Grade Level

6-9

Length

111 pages

Date Published

1992

**THE BOTTOM
LINE**

"Incorporated science without being overly scientific.
Very appropriate for language arts and social studies."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Lists numerous sources of information. Certain activities specifically focus on diversity.

Depth

Strong presentation of concept of community. Presents the ecological concept of community through a social context.

Emphasis On Skills Building

Builds communication skills. Encourages exploration and discovery.

Action Orientation

Many lessons have an action component; many are community-based.

Instructional Soundness

Activities are highly interdisciplinary and learner-centered. Provides suggestions for evaluation. Connects subject matter to learners' lives.

Focus is on California. To some degree unit is dependent on the museum which produced the material.

Usability

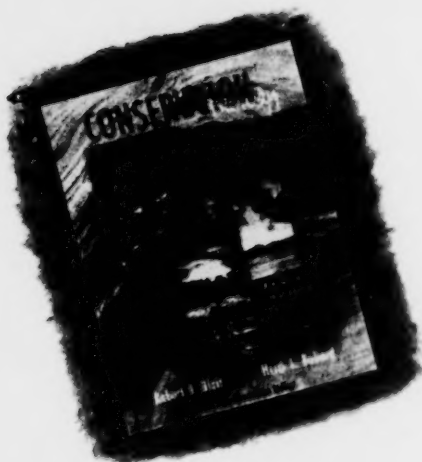
Loose-leaf, can be updated easily.

Simple layout and design using largely text and few charts and graphs.

BEST COPY AVAILABLE

"Excellent bottle biology section."

"The materials provide an interesting approach to the concept of community."



Conservation Biology



IN A NUTSHELL

Written by: Robert B. Blair &
Heidi L. Ballard
Center for Conservation Biology
Stanford University, Stanford, CA

Kendall/Hunt Publishing
Company
4050 Westmark Drive
Dubuque, IA 52002-1840
phone: (800) 228-0810

Cost: \$49.90

SUBJECTS

Mathematics

Science

Social Studies

This is a collection of real science issues. The curriculum is built around activities which reflect the problems and questions facing conservation biologists as well as politicians, economists, and citizens. Students read, answer thought questions, formulate hypotheses, and conduct experiments. Activities include role playing and outdoor explorations of diversity in varied sites. Major themes investigated include the values of biodiversity, the principles of island biogeography, habitat fragmentation, and causes of species extinction.

Students are also encouraged to apply their new knowledge by designing a nature reserve.

Grade Level

11 - 12

Length

265 pages

Date Published

1993

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"This is about conservation biology and, while not wildly innovative, it is intelligent and varied enough to keep students engaged."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Well-referenced, excellent background information. Encourages students to collect and analyze data.

Science-centered approach. Might be too much for some educators and students.

Depth

Articles, activities, and suggested videos provide context and depth.

Focus is on science, not as much on cultural and economic relationships.

Emphasis On Skills Building

Materials encourage students to think critically, hone field skills, forecast, plan, and analyze.

Issues analysis is limited in its focus on economics and conflict resolution.

Action Orientation

The role of the biologist in protecting biodiversity is well-explored and is the focus of this curriculum.

Doesn't emphasize individual or community-based action.

Instructional Soundness

Clear goals and objectives. Balance of indoor and outdoor activities.

Relevance to learners' daily lives could be stronger. Could be more interdisciplinary.

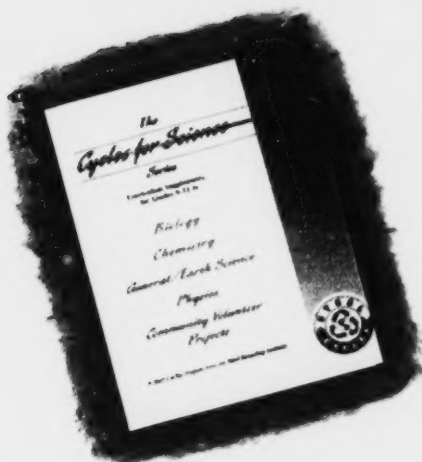
Usability

Logically presented. Students are provided with workbooks; teacher's guide includes background information, transparencies, keys, and resource lists.

BEST COPY AVAILABLE

"Could be more effective at resolving conflicts affecting biodiversity by integrating non-biologist perspectives."

"I would have loved this as a unit when I was in high school."



The Cycles for Science Series: Curriculum Supplements



IN A NUTSHELL

Editor / Writer: Diana Rogers
Steel Recycling Institute
680 Anderson Drive
Pittsburgh, PA 15220-2700

phone: (800) 876-7274
fax: (412) 922-3213
e-mail: sri@recycle - steel.org

Cost: \$56.00 for the complete set. Supplements may be purchased separately.

SUBJECTS

Mathematics

Science

Cycles for Science seeks to provide teachers and students with a greater understanding of steel and steel can recycling, and to encourage responsible solid waste handling practices. The activities are intended to be interactive and relevant to state and local teaching goals. The curriculum includes a 7 1/2 minute introductory videotape, a poster, and discrete units on physics, biology, chemistry, general science, earth science, and community volunteer projects. Each of these units has its own curriculum supplement with lessons, activities, planning guides, transparency masters, charts, maps, illustrations, and appendices. Within each unit, the lessons are arranged according to the themes supply and demand, collect and haul, and sort and produce. Although the overall emphasis is on steel, lessons also address composting with worms, community activism, and resource allocation.

Grade Level
9 - 12

Length
pages vary

Date Published
1996

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"Almost all the activities in this curriculum encourage the use of steel products and speak positively on steel's recycling ability."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Lists authors, reviewers and primary sources of information.

Promotes the value of steel and its recyclability.

Depth

Concepts from biology, physics, chemistry and geology are presented with unifying themes.

Emphasis On Skills Building

Materials address laboratory and critical thinking skills.

Action Orientation

Asks students to examine their behavior and to determine what they can do. Includes *Community Volunteer Projects* booklet.

Recycling is primary focus.

Instructional Soundness

Learners build on prior knowledge through research, discussion and experience. Concepts are repeated in different ways. Goals and objectives are clearly stated.

Does not always address different learning styles.

Usability

Materials are clear and easy to use. Units are self-contained. Attempts to make connections to state/local objectives for grades 9-12 in specific science areas. Professional development program available at cost.

"Emphasizes the successes in steel recycling while acknowledging the improvements that need to be made."

"Any high school science teacher comfortable in a lab can easily use these materials."



The Watercourse
201 Culbertson Hall
Montana State University
Bozeman, MT 59717-0575
phone: (406) 994-5392
fax: (406) 994-1919

South Florida Water
Management District
3301 Gun Club Road
West Palm Beach, FL
33416-4680
phone: (407) 686-8800

Cost: \$15.95

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

Discover A Watershed: The Everglades



IN A NUTSHELL

The Everglades is of interest to people both within and beyond the watershed. This comprehensive guide to this unique ecosystem, developed for formal and nonformal educators, is divided into three parts: The 'Natural Watershed', a reference section that includes the natural and human history of the area; 'The Altered Watershed', a discussion of contemporary issues and potential solutions; and 'Investigations', a collection of learning activities. This text can provide a six- to eight-week course of study on the Everglades watershed. Activities may also be used in any order, with educators selecting those elements of the watershed most relevant to their particular areas of study. Individual activities identify skills, time required, setting, and subject areas, and include suggestions for warm-up and wrap-up extensions. Illustrations consists of drawings, diagrams and numerous black and white photographs. Appendix includes maps, index, list of species and additional resources.

Grade Level

6-12

Length

278 pages

Date Published

1996

**THE BOTTOM
LINE**

"For Florida residents this is an excellent resource. Although it could be modified for other areas it does seem limited to the Everglades."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Information is current and comes from thoroughly referenced primary sources. Represents differing viewpoints. Openness to inquiry evident in student "investigations".

May not represent agriculture and other land uses fairly.

Depth

Numerous concepts utilized, drawing from earth science, ecology, geography, history, mathematics, and language arts.

Emphasis On Skills Building

Reinforces skills such as observing, recording, mapping and analyzing. Includes many opportunities for instructor to expand on these.

Action Orientation

Emphasizes civic responsibility and the importance of being informed. Encourages problem-solving skills and the application of knowledge.

Instructional Soundness

Some activities address students' multiple intelligences. Assessments correlate with objectives.

Would require adaptation to make it relevant to students outside of Florida.

Usability

Well-organized, easy to read lessons include subject, duration, and vocabulary.

Requires teacher to become familiar with a great deal of background information.

"Visually, a beautiful manual. I could not tell if it was a student text, a teacher guide to a text, or a teacher text. Actually, I still am not sure."

"This is an excellent source of information for the Everglades."



EM*Power!

Environmental Management Power Leader's Guide



IN A NUTSHELL

Written by: Dorothea Kunz Shuman,
Maureen Toomey, & Jerry Newman

Idaho Water Resources
Research Institute
106 Morrill Hall
University of Idaho
Moscow, ID 83844-3011

phone: (208) 885-2170
e-mail: mtoomey@uidaho.edu

Cost: \$15.00 for curriculum binder,
poster, leader guide, & youth journal.
\$3.00 for poster alone.

SUBJECTS

Fine Arts
Language Arts
Science
Social Studies

*EM*Power* uses a process approach to guide youth from acquisition of knowledge through application of that knowledge by completing a home or community action project. Working under the guidance of an adult leader, youth first identify waste management concerns, learn what makes a concern an issue, and come to discern the differences between facts and opinions. Together, the group collects information needed for the completion of the action project. The curriculum walks teacher and student through this process with six sequential lessons. Each lesson lists time required, background information, procedure, and suggestions for additional activities. The curriculum comes with student worksheets, handouts, appendices, a youth journal for students to use throughout the curriculum, resources, glossary, poster, and teaching materials. Assignments include such diverse actions as participating in a role play, developing a questionnaire, and preparing a budget for the service project.

Grade Level

6 - 9

Length

122 pages

Date Published

1995

THE **BOTTOM**
LINE

"I like the simple progression to an open-ended action plan."

"Almost too specific on defining waste management issues."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Encourages students to form own opinions and review those of others. Facts are clear and sources identified.

Depth

Establishes scope, sequence and vocabulary for each lesson.

Lacks historical and cultural contexts. Does not go beyond the local community.

Emphasis On Skills Building

Encourages critical thinking and investigation with focus on putting skills into action.

Action Orientation

Encourages responsibility at local level. Examines cumulative effects of solid waste on the environment.

Instructional Soundness

Clearly states goals and objectives. Uses techniques for accommodating different learning styles. Activities are learner-centered and tie projects to learner experiences.

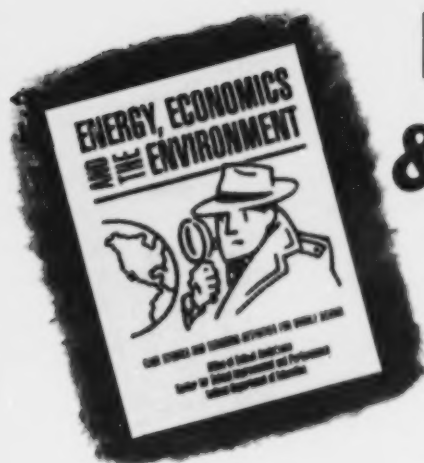
Usability

Instructions are clear and well formatted. Extensive reference lists, many ideas for additional activities. Masters are clear and well-sized.

Few suggestions for adapting to special learners or those with language difficulties.

BEST COPY AVAILABLE

"Excellent materials for leading/developing older students in the identification, discussion, and action phase... I liked the variety of ways the students could explore the issues and grapple with them on their own, instead of pointing them in one direction."



Energy, Economics & The Environment:

Case Studies and Teaching Activities for Middle School



IN A NUTSHELL

Curriculum Designers: Harlan Day,
Robert Harris, & Joe Wright

Indiana Department of
Education - Office of Program
Development
Center for School
Improvement & Performance
Room 229, State House
Indianapolis, IN 46204-2798

phone: (317) 232-9157

Cost: \$8.00

SUBJECTS

Economics

Science

Social Studies

This is the middle-school edition of a curriculum program which seeks to enable students to address problems in the areas of energy, economics, and the environment by providing basic knowledge about the subjects, teaching basic decision-making skills, and involving learners in meaningful, motivating learning activities. Each of the four curriculum units consists of a detailed case study on an environmental concern (e.g. the burning of leaves is discussed in the context of air pollution) and several classroom activities to explore and reinforce the material.

The material introduces a five-step decision-making model and numerous other tools for research and analysis. Procedures, time requirements, materials, and vocabulary are listed for each activity. The text includes simple drawings, graphs, models for decision-making and analysis, and a list of further resources. Elementary and high-school versions of the curriculum are also available.

Grade Level

6-8

Length

119 pages

Date Published

1994

THE **BOTTOM**
LINE

"There is good information and some solid activities are here, but the material seems a little out of date and has a consumer/industry bias."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Activities and investigations seem to be open-ended. Clearly documented sources and contributors. Attempts to examine all costs in decision making.

May show some industry bias. Some information (e.g. references to the Soviet Union) are out-dated.

Depth

Conceptual framework clearly defined in regard to economics.

Emphasis On Skills Building

Heavy on decision-making, discussion, critical and creative thinking skills.

Action Orientation

Each lesson provides specific activity options.

Instructional Soundness

Clearly states goals and objectives. Addresses multiple intelligences.

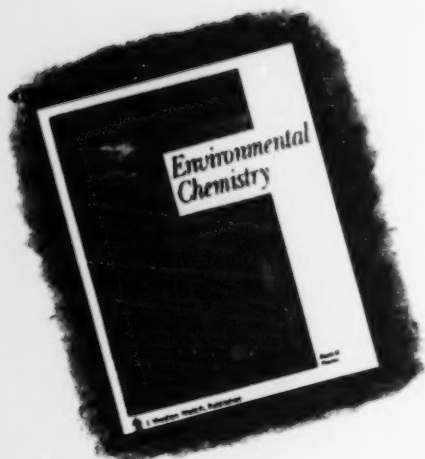
Usability

Presents material logically and sequentially. Directions are clear.

Has neither table of contents nor index.

BEST COPY AVAILABLE

"I found that the materials provide a process to organize information. Because of the times we live in and the plethora of information and misinformation available, it's important to provide students with tools to organize their thoughts."



Environmental Chemistry



IN A NUTSHELL

Written by: David E. Newton

J. Weston Walch, Publisher
321 Valley Street
P.O. Box 658
Portland, ME 04104

phone: (800) 341-6094
(207) 772-2846
fax: (207) 722-3105

Cost: \$10.95

SUBJECTS

Health
Mathematics
Science
Social Studies

This textbook is designed to help students develop a broad, general understanding of the role of chemistry in the creation and solution of environmental problems. Each of the twelve chapters addresses a different situation in air pollution, water pollution, solid waste management or atmospheric change. While the emphasis is on discussing each of these in terms of the organic and inorganic chemical equations and reactions involved, the biological, social and political ramifications are also addressed. Along with extensive explanations of the problems, the text contains a series of activities (which include calculations, essays, graph construction, interviewing and other research techniques), tables, figures, and review questions. Student activities explore a range of issues such as sources of sulfur and nitrogen oxide and ways to combat greenhouse effects. Also included are a glossary, index and list of additional resources. Illustrations are drawings and black-and-white photographs.

Grade Level

9-12

Length

183 pages

Date Published

1991

THE **BOTTOM**
LINE

"Presents chemistry as a tool: sometimes abused, but necessary to continue human existence, and also necessary in the correction of the problems its past use has created."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Accurate presentation of factual information. Attempts to provide balanced perspective on most issues and to mention differences of opinion on scientific matters.

Approaches topic from perspective of environmental problems; this orientation can give "gloom and doom" impression.

Depth

Connects chemistry discussions to social issues. Provides in-depth study of environmental chemistry.

Emphasis On Skills Building

Requires some library research and critical thinking skills. Encourages students to apply knowledge to issues.

Material requires use of skills, but does not focus on skills development as such.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Does not present material in terms of outcomes, goals or objectives.

Usability

Well-written explanations of terms and issues. Provides some variety of activities.

Instructions for activities are vague. May be too sophisticated for many students.

"Doesn't balance its negative statements on polluting entities with ways that problems are being addressed."

"Can be the basis of an issues- or a sciences-oriented approach to pollution problems."



Environmental Education in the Schools:

Creating a Program that Works



IN A NUTSHELL

Written by: Judy A. Braus & David Wood

NAAEE Publications and Membership Office
P.O. Box 400
Troy, OH 45373

phone/fax: (937) 676-2514
web site: jthoreen@igc.apc.org

Cost: \$17.50 for NAAEE members.
\$22.00 for non-NAAEE members,

SUBJECTS

Fine Arts
Language Arts
Mathematics
Physical Education
Science
Social Studies

This collection of environmental education activities and materials was designed for and originally published by Peace Corps volunteers. Its purpose is to help volunteers and their counterparts working in schools to develop strategies for creating effective environmental education programs. The suggestions are designed for a variety of grade levels, for children and adults, for urban and rural audiences, and for formal and non-formal settings. The nine chapters cover a variety of topics, including the intellectual development of children, strategies for developing an environmental education program relevant to the local community, and techniques for program evaluation. More than two hundred pages are dedicated to providing examples of activities, each with a stated objective, subject area, targeted age, and materials list. Lessons are designed to present environmental education across all subject areas, including business, economics, and the humanities.

Grade Level

K-adults

Length

500 pages

Date Published

1994

THE BOTTOM LINE

"Difficult to assess from a curriculum standpoint, as it is more of a how-to book."

"Love this book!"

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Accurate facts; issues are brought forward in non-judgemental ways. Provides numerous references.

Depth

Strong concept focus.

Emphasis On Skills Building

Explores ways to develop critical and creative thinking. Uses issues to build skills.

Not a strong emphasis on analytical science.

Action Orientation

Offers suggestions for actions related to topic. Strong emphasis on ethics, human dignity, conflict resolution and social responsibility.

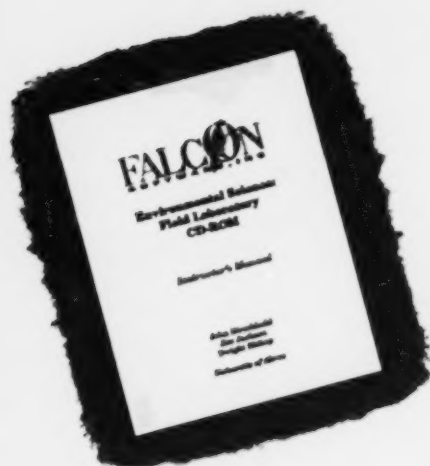
Instructional Soundness

Addresses different learning styles. Makes outstanding use of case studies.

Usability

Concepts can be applied to different countries. Materials designed to be easy for teachers to use.

"An excellent resource for classroom teachers, but might better serve as the central text of a complete course on environmental education for preservice or inservice teachers."



Environmental Science Field Laboratory



IN A NUTSHELL

Falcon Software, Inc.
One Hollis Street
Wellesley, MA 02181
phone: (617) 235-1767
fax: (617) 235-7026
e-mail: FalconInfo@falcon
software.com

Cost: \$395 for single user.
Student version forthcoming.

SUBJECTS

Language Arts
Mathematics
Science
Social Studies

This CD-ROM provides students with an opportunity to explore the applications of science to seven environmental problems: stream pollution, minerals for society, coal energy, radiation, legal control of the environment, streams and floods, and geology of homesite selection. For each problem, the students take on the role of a scientist, receive an introduction to the problem and to their task, and are required to collect, record, and analyze data. Set consists of a CD-ROM and a sixty two page instructor's manual, which includes answers to the objective tests in the program. An introductory module, which can be accessed from the main menu or any of the seven subject areas, guides students through the specifics of the program. Students can proceed at their own pace; progress can be assessed through quizzes and on-screen essay assignments. Program features text, still photographs, movies, diagrams, maps, charts, and tables.

Grade Level
9-12

Length
1 CD-ROM

Date Published
1996

**THE BOTTOM
LINE**

"Terrific practice at using lots of skills related to specific environmental problems. Could be enhanced by adding more on socio-political/economic aspects of each problem."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Abundance of background and reference material. Presents problems in a very detached, objective manner.

Could be more inclusive of different ethnic and cultural perspectives.

Depth

Covers a wide range of topics. Local in nature but widely applicable.

Could benefit from further detail such as discussion of technological, political and cultural concerns.

Emphasis On Skills Building

Requires students to gather, interpret and evaluate data and draw conclusions.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Specifies objectives at beginning of each module. Invites involvement with fun graphics, slogans and names. Encourages further research. Provides three forms of assessment.

Some screens have largely words, nothing else. Completion times for modules can be lengthy (3-4 hours) and occupy several class sessions.

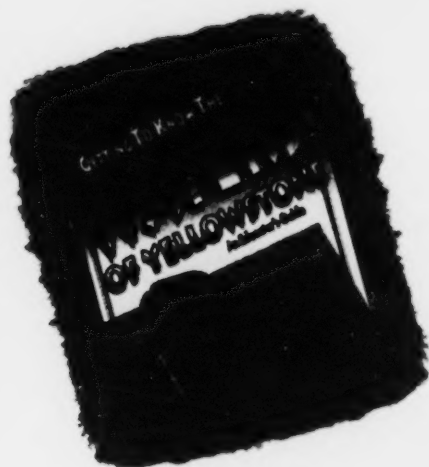
Usability

Online help available. Technical support available through E-mail or fax. Easy to follow directions.

Pre-designed sequencing prohibits skipping items. Next step not always clear. Amount of material could be confusing.

"Would well be used as a 'unifying theme' in an upper level high school course."

"Take time to learn the program before using it. Potential for too much class time to be wasted figuring things out."



Getting to Know the Waters of Yellowstone: An Educator's Guide



IN A NUTSHELL

The Watercourse
201 Culbertson Hall
Montana State University
Bozeman, MT 59717-0575
phone: (406) 994-5392
fax: (406) 994-1919

The Yellowstone Association
P.O. Box 117
Yellowstone National Park, WY
82190
phone: (307) 344-2293

Cost: \$9.95

SUBJECTS

Language Arts

Science

Social Studies

This booklet contains eight activities and accompanying information and materials focusing on the importance of water in the natural systems of Yellowstone National Park. The developers intend the curriculum to be adaptable to other watersheds. Topics include the water cycle, animal adaptations, geology of geysers, water quality and management, and wildlife identification. Materials include maps, charts, activity cards, and interesting facts and quotations about Yellowstone. This curriculum can be taught independently or in conjunction with a larger set of activities (*Expedition: Yellowstone*), also developed around the Yellowstone Park ecosystems. Material includes background information, vocabulary, materials lists, procedures, evaluations, extensions, and worksheets or cards necessary for activities. Grade level, subject, duration and suggested setting are given for each.

Grade Level
4-12

Length
39 pages

Date Published
1995

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"The background information supplies a good measure of depth... however, the activities may simplify this information to the point of making it superficial."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Provides scientifically accurate background information. No apparent bias.

Does not specifically cite those involved in development and review.

Depth

Thorough treatment of water-related issues in Yellowstone National Park.

Lists possible subjects/classes rather than concepts.

Emphasis On Skills Building

Involves a large variety of skills, from measuring to creative writing.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Materials are interdisciplinary and employ many teaching methods and environments. Extension activities relate material nationally and internationally.

Usability

Provides clear conceptual framework. Materials are accessible, inexpensive, and long-lived; most can be adapted to other geographical areas. Support is available through National Park Service.

Some materials have a fairly narrow focus (i.e. Yellowstone).

BEST COPY AVAILABLE

"Good coverage of a small focus topic."

"Though resource is set up for Yellowstone, the activities can easily be transferred to other watersheds."



Global Environmental Change Series:

Biodiversity & Deforestation



IN A NUTSHELL

The Global Environmental Change Series teaches students how to gather relevant information from pertinent areas of study, and encourages them to develop their own opinions, decisions, and solutions to problems. Biodiversity uses Costa Rica as a case study in balancing economic growth and resource conservation. Activities focus on defining and quantifying biodiversity, becoming amateur taxonomist, investigating life zones in Costa Rica, and understanding the complexity of managing a tropical forest. Deforestation uses Washington State's Olympic Peninsula as a case study of deforestation's ecological and economic impacts. Activities focus on defining deforestation, ecological succession, soil erosion, habitat loss, and inhabitant species, and understanding land use. Activities in both guides include background information, procedures, questions for discussion, suggestions for further study, and reproducible student pages.

Grade Level

9-12

Length

61-64 pages

Date Published

1997

National Science Teachers
Association
1840 Wilson Blvd.
Arlington, VA 22201-3000

phone: (800) 722-6782
internet: <http://www.nsta.org>

Cost: \$11.66 for NSTA members.
\$12.95 each for non-NSTA
members.

SUBJECTS

Economics
Mathematics
Science
Social Studies

**THE BOTTOM
LINE**

"Information is accurate and great strides are taken to remain fair on controversial issues."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Accurate. Information is presented in a fair and neutral fashion. Different viewpoints and a diversity of cultures are represented.

Unclear as to whether materials were reviewed by scientists or tested in classrooms. Background is not referenced.

Depth

Case study approach allows for consideration of historical, cultural, and economic aspects of issues. Focus on local to global aspects of environmental issues. Makes connections between issues.

No clear conceptual framework or list of concepts addressed in each activity.

Emphasis On Skills Building

Focus on creative and critical thinking. Encourages students to analyze information and to draw their own conclusions.

Action Orientation

Materials help students identify issues and consider multiple perspectives and solutions. Lists conservation laws and agencies that are involved in deforestation and biodiversity issues.

Does not emphasize individual and group action projects or the link between issues and personal responsibility.

Instructional Soundness

Goals are clearly stated. Many opportunities for practical experience. Involves variety of subjects, activities and learning styles. Extends learning environment beyond the classroom.

Some disciplines (e.g., language arts, fine arts) are poorly represented. Limited focus on assessing learner progress.

Usability

Clear, logical, and easy to use. Extensive background information. Can be adapted for a variety of grade levels.

BEST COPY AVAILABLE

"Case study format is excellent - helps students apply new information in specific areas to regional and global issues that are similar."



Global Systems Science Series...

An Introduction
Changing Climate
Closing The Ozone Hole
Ecosystem Change
Energy Flow
Energy Use
Human Population Impact
Life and Climate
Losing Biodiversity



IN A NUTSHELL

Lawrence Hall of Science
University of California
Berkeley, CA 94720

To be published Fall 1998.
For further information contact
the above address.

Cost: Not determined

SUBJECTS

Mathematics

Science

Social Studies

The Global Systems Science Series focuses on the study of how people interact with the natural environment and what we can do to achieve a more sustainable world.

The course is divided into nine student guides, which can be used independently and in any order. Each guide raises some important questions for which there are no "correct" answers and applies scientific knowledge to key global problems. Students are encouraged to search for possible solutions. The accompanying teachers' guides offer suggestions for class discussions, laboratory activities, and homework assignments and includes data sheets for duplication. The goals of the program are to encourage student interaction and collaboration and to have students think about and care about what is happening in our world.

Grade Level
9-12

Length
60+ pages per
guide

Date Published
1998

THE **BOTTOM**
LINE

"This series is not afraid to present difficult and controversial issues."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Abundance of factual information, usually presented in an unbiased manner. Reviewed and tested by 125 teachers. Emphasis given to women doing scientific research.

Some questions are not as open-ended as they could be. Doesn't always show all sides of an issue.

Depth

Provides attention and linkages to different perspectives. Very thorough. Strong portrayal of evolution of the human perspective.

Emphasis On Skills Building

Emphasis on problem solving, critical and creative thinking skills.

Action Orientation

Encourages students to explore various choices and take action. Considers ethical and moral issues without telling students what to think. Focuses on sense of personal stake and responsibility.

Action-skill activities focus on individual actions. Could give more emphasis to conflict resolution and working with others to solve environmental problems.

Instructional Soundness

Very student-centered. Maintains interest by focusing on things important to high school students. Materials can be adapted for different learning styles and abilities. Includes charts and graphics that summarize concepts.

Usability

Writing is engaging.

Design somewhat dense and not very interesting. Could use more photos or illustrations.

BEST COPY AVAILABLE

"Good use of everyday situations to explain scientific concepts."

"These materials are comprehensive and future-oriented in a thought-provoking way."



The Great Ocean Rescue



IN A NUTSHELL

Tom Snyder Productions
80 Coolidge Hill Road
Watertown, MA
02172-2817

phone: (800) 342-0236
fax: (617) 926-6222

Cost: \$149.00

SUBJECTS

Mathematics

Science

Social Studies

This curriculum consists of two parts. The first is a computer simulation, in which students take on one of four roles (oceanographer, geologist, marine biologist, environmental scientist) to analyze an environmental problem and make recommendations for a plan of action. Four different missions, involving different environmental subjects, are included. The second part consists of a video library of more than 85 stills and short films which complement the rescue activities. A series of lesson plans and activities accompanies the library. This program includes a CD-ROM or laser disc, four student booklets (one for each of the roles in the simulations), and a 118-page teacher's guide, which includes lesson plans, worksheets, additional resources and information on preparing for the activities. Student booklets include glossaries, maps and diagrams. The activities require eight to twelve class periods to complete.

Grade Level

5-8

Length

Multimedia Kit

Date Published

1993

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"Polluters depicted as unprincipled thugs, and reassuringly placed behind bars in the end. Not very realistic about the difficulty in implementing solutions."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Presents problems in terms of data and scientific observations. Depicts a variety of cultures. Lesson plans expose learners to other viewpoints.

States that data was checked by reputable scientific institutes, but does not reference sources of information.

Depth

Shows collaboration of several science-based fields to solve one environmental problem.

Does not address cultural, historical, economic or political impacts of issues.

Emphasis On Skills Building

Emphasizes critical thinking. Requires learners to infer, analyze, reflect and apply gathered information to solve problems.

Program may lead learners to think that environmental problems have only one solution. Does not encourage students to make their own inquiry.

Action Orientation

Some activities address personal responsibility and local action.

Instructional Soundness

Appeals to different learning styles by use of lectures, role play, group discussion, cooperative learning. Gives general goals and objectives which teachers can further develop.

Usability

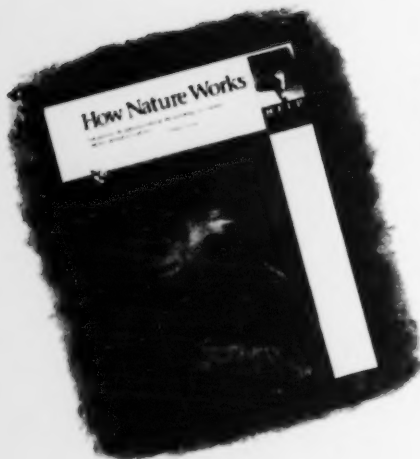
Provides step-by-step instructions, easy to use and understand. Teacher guide offers extensive lesson plans, including worksheets and handouts.

BEST COPY AV

3LE

"A good resource for understanding the biological issues involved in environmental problems."

"The program feels like a mini-adventure and it stimulated excitement and enthusiasm."



How Nature Works

Teacher's Manual: HELP (Habitat Ecology Learning Program)



IN A NUTSHELL

Habitat Ecology Learning
Program
Bronx Zoo Education Department
2300 Southern Boulevard
Bronx, NY 10460

phone: (800) 937-5131
fax: (718) 733-4460

Cost: \$26.00 for *How Nature Works*.
\$230.00 for complete set.

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

H.E.L.P. is designed to help instructors coordinate the teaching of ecology and science with valuable and productive field visits to zoos. This curriculum consists of six teacher manuals, five of which concentrate on teaching about specific habitats (rain forests, deserts, wetlands, temperate forests and grasslands). For each habitat, attention is given to the natural processes as well as to human impact and interaction. Student activities consist of research, calculation, educational games, zoo or field trips, data interpretation, creative writing or visual arts. The first volume, *How Nature Works*, provides an overview of major ecological and biological concepts such as species, habitat, and food chains. Individual lesson objectives, types of activities, and sequencing are presented in a scope and sequence chart in each volume. Materials include slides, student worksheets, pen and ink drawings, game supplies, and suggestions for teachers.

Grade Level
4 - 6

Length
150 pages

Date Published
1996

THE **BOTTOM**
LINE

"I think this material is set out in a creative and effective manner. The units and lessons are in a progressive learning style and build upon each other."

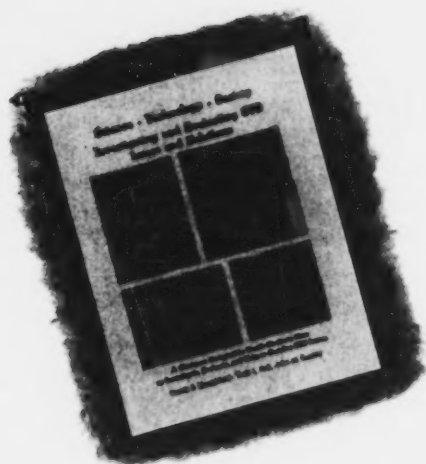
What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	THINGS TO CONSIDER
Fairness and Accuracy	Materials well-researched, supported with tables and graphs. Displays a variety of viewpoints.	Some activities have a bias towards a "best choice".
Depth	Strong awareness component. Gives attention to local to global scales and both short and long term effects. Presents concepts in context.	Does not always make information relevant to students.
Emphasis On Skills Building	Employs basic science skills. Some activities require critical thinking skills.	
Action Orientation	Emphasizes a strong sense of responsibility.	Weak emphasis on local action compared to global. Not much action until the closing unit.
Instructional Soundness	Provides a range of instructional methods and assessment opportunities. Clearly states learner outcomes. Goals and objectives are appropriate for age group.	Too heavy of a reliance on chalkboard, worksheets, and written activities.
Usability	Provides adequate background information and worksheets. Sequence charts help in planning a program. Support made available.	Limited hands-on activities. Some information will need to be updated as policies/populations change.

BEST COPY AVAILABLE

"The lessons give thorough information and back it up with valuable activities. The last unit builds on writing and citizenship."

"Easy to use and full of opportunities to adapt to a particular teacher's style."



Investigating and Evaluating STS: Issues and Solutions



IN A NUTSHELL

Written by: Harold R. Hungerford,
Trudi L. Volk, & John M. Ramsey

Stipes Publishing Company
10-12 Chester Street
Champaign, IL 61820

phone: (217) 356-8391
fax: (217) 356-5753

Cost: \$24.20 teacher's edition.
\$12.60 student's edition.

SUBJECTS

Economics
Language Arts
Mathematics
Science
Social Studies

This curriculum is designed to help students become more effective and capable citizens by enabling them to come to grips with the new and evolving issues in science, technology and society (STS). Its stated goals are to 1) teach learners the differences and interrelationships between science, technology, and society, 2) teach learners the intellectual skills needed for the autonomous investigation of STS issues, 3) provide learners with an opportunity to investigate one or more STS issues, and 4) teach learners the skills associated with the resolution of STS issues. Students are trained in how to proceed with their own evaluation and presented with options for follow-up actions. The text includes readings, photographs, worksheets, ratings, surveys, graphs and other evaluative and reflective instruments. The teacher's edition contains 108 extra pages of worksheets, text, answers to assignments, suggestions and activities.

Grade Level

6 & up

Length

188 pages

Date Published

1990

**THE BOTTOM
LINE**

"I think this curriculum helps build confidence in students that they can tackle any subject in EE and investigate and evaluate the issue and find a balanced solution."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Balance of issues and dialog. Learners look at all perspectives. Represents tough issues fairly. Appears to represent industry fairly.

Possibility of subtle persuasion.

Depth

Focus is on concepts and unifying ideas vs. specific content. Ties local and national/global issues and looks at context of issues.

Emphasis On Skills Building

Builds skill in analysis, criticism, evaluation, letter writing, and researching. Helps learner to go beyond provided materials.

Action Orientation

Includes chapter specifically on action. Incorporates values development regarding action and encourages balanced action. Empowers students to find solutions.

Instructional Soundness

Layout is learner-centered and material constructive. Includes ties to experiential and service learning.

Could benefit from more interactive activities. Relies heavily on reading.

Usability

Very logical and usable. Effective use of photographs as support materials.

Layout and introduction not engaging. Some photographs may not reproduce well.

BEST COPY AVAILABLE

"This is a workbook/text designed to help students develop the idea of fairness and accuracy in analyzing all issues related to science and technology - not just environmental."



Queue
338 Commerce Drive
Fairfield, CT 06430

phone: (800) 232-2224
(203) 333-7268
fax: (800) 775-2729

Cost: \$145.00

SUBJECTS

Science

Learning About Insects



IN A NUTSHELL

This CD-Rom provides information about insect behavior, identification and biology. The bulk of the information is in three main sections, entitled insect body, rhythm of life, and survival tactics. For each, information is provided through both recited and written text, and is supported by stills and video clips. The glossary, index, help functions and reference diagrams can be directly accessed during each lesson. Each section also provides a quiz to test the student's mastery of information. The two other sections are diagrams, in which two diagrams of insect bodies and structure are provided, highlighting organs or body parts on request, and a photo album, which allows the student to view 89 still pictures of insects from around the world. A supplemental function allows the teacher to print out text or quizzes directly from the program.

Grade Level

7-12

Length

CD-ROM

Date Published

1995

**THE
BOTTOM
LINE**

"This is excellent reference material... this can be used as a means for introducing the environment of insects for further study."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Presents facts about and photographs of insects.

Depth

Fails to go beyond stating information, makes no connections to scales or other disciplines.

Emphasis On Skills Building

Uses reading, vocabulary, understanding diagrams.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Presents information through text, narration, and a combination of still and moving shots. Provides quizzes to test knowledge.

Usability

Easy to use, clear directions. Easy to go back or forward to review.

No extensions or suggestions for further research. Does not explain function or use of some buttons on screen.

"Great presentation of many aspects of the insect world including survival, adaptations, and body parts.

"Good reference material, many aspects to choose from, easy to use."



Let's Reduce and Recycle:

Curriculum for Solid Waste Awareness



IN A NUTSHELL

United States Environmental
Protection Agency Solid Waste
and Emergency Response

National Center for
Environmental Publications &
Information

P.O. Box 42419

Cincinnati, OH 45452

Reference # EPA/530-SW-90-005

phone: (800) 490-9198

web site: <http://www.epa.gov>

Cost: Free of charge.

SUBJECTS

Economics

Fine Arts

Language Arts

Mathematics

Science

Social Studies

This guide seeks to educate students about the problems associated with solid waste generation and disposal. The activities encourage students to consider options for reducing the amount of waste they create by recycling and other measures. The lesson plans deal specifically with garbage, resource use, and recycling, but attempt to address a number of related social and economic issues. The guide instructs teachers to develop a community profile from which to identify activities which are relevant to students.

Although listed in a structured sequence, the activities have been designed to give instructors flexibility in designing their classes. The activities themselves are divided between those for grades K-6 and those for grades 7-12; each has a stated objective and questions for students. Material includes student handouts, a glossary, clipart, posters, a student skit, resource lists, and evaluation forms.

Grade Level

K-12

Length

144 pages

Date Published

1990

**THE BOTTOM
LINE**

"Too heavily dependent upon discussion, especially at the earliest units where students need to be 'hooked'."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Includes varying perspectives on how to handle waste.

Does not give dates or sources for statistics.

Depth

The activities are grouped and follow a logical progression. Adds economic, historical and geographic contexts. Develops awareness.

Little use of information to support concepts.

Emphasis On Skills Building

Question and answer format does not encourage independent inquiry.

Action Orientation

Demonstrates the connection between student action and the solid waste issue, and their ability to make an impact. Suggests projects ranging from litter patrol to community education.

Gives students the "appropriate course of action" rather than allowing them to decide for themselves.

Instructional Soundness

Materials relate directly to everyday lives. Each activity begins with clearly stated objectives.

Few hands-on or participatory activities.

Usability

Provides resource section and glossary, including list of EPA materials. Required equipment is readily available.

Little background information.

BEST COPY AVAILABLE

"Helps students build a knowledge based which will help them make future decisions."

"States that the teacher's most important role is to generate enthusiasm through student activities."



Living Lightly In The City:

An Environmental Education Guidebook - Volume I



IN A NUTSHELL

Written by: Maura O'Connor

Schlitz Audubon Center
1111 East Brown Deer Road
Milwaukee, WI 53217

phone: (414) 352-2880
fax: (414) 352-6091

Cost: \$22.00

SUBJECTS

Fine Arts
Language Arts
Mathematics
Physical Education
Science
Social Studies

The focus of this curriculum is on helping primary grade students in urban and suburban settings to explore and enjoy nature. The concept of 'living lightly in the city' is to acquire knowledge of one's relationship to the natural world and to use that knowledge effectively when making consumer choices and life-style decisions. The emphasis is on enjoyment and on bringing children to recognize their connection to the natural world. Each of the six units contains seven to eight activities, with focus, skills and subject matter identified for each. Students explore through a combination of indoor and outdoor activities, laboratories, artwork, service projects, and writing assignments. Concepts, objectives, subjects, time requirements, materials and preparation are listed at the beginning of each lesson. Also provided are three posters, references, student worksheets, masters, and a subject index. Some activities have separate instructions for different grades.

Grade Level

K-3

Length

178 pages

Date Published

1993

THE **BOTTOM**
LINE

"Environmental education is ripe with complex subject matter and problems. The materials here set the stage for later investigation."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Includes numerous additional resources.
Balanced presentation.

Depth

Contains curriculum/
conceptual framework.

Little diversity in
approaches or perspectives.

Emphasis On Skills Building

Develops critical thinking
skills at an appropriate level.
Encourages questioning.

Action Orientation

Take-home sheets promote
responsibility and awareness.

Instructional Soundness

Encourages use of different
learning styles. Activities
emphasize fun and an
affective approach.

Usability

Provides goals, objectives,
outlines, materials and
activity sheets. Activities
are simple and low-cost.

Could benefit from a
glossary. Extension
activities are mostly for
classroom.

BEST COPY AVAILABLE

"Tends to leave out preaching and to focus on knowledge and enjoyment."

"There is an extreme shortage of good EE material for early elementary grades.
More of this material is needed."



Living Lightly On The Planet:

A Global Environmental Education Guidebook - Volume II



IN A NUTSHELL

Written by: Maura O'Connor

Schlitz Audubon Center
1111 East Brown Deer Road
Milwaukee, WI 53217

phone: (414) 352-2880

fax: (414) 352-6091

Cost: \$22.00

SUBJECTS

Language Arts

Mathematics

Science

Social Studies

This is the fourth part of a complete curriculum designed to help young people develop an environmental ethic. Building upon an awareness and appreciation for the environment developed in the earlier grades, this secondary curriculum helps students develop problem-solving skills to enable them to understand the complexity of environmental issues and to find positive solutions to their concerns. The thirty-two 'investigations' are arranged in six units covering carrying capacity, water issues, solid waste, nuclear power and weapons issues, appropriate technology, and changes in human demographics. Each unit includes a number of readings, discussion questions, worksheets, illustrations and reference materials. Activities themselves include discussions, personal inventories, worksheets, role plays, research, and games. Pages are illustrated with drawings, charts and tables.

Grade Level

10-12

Length

206 pages

Date Published

1995

THE **BOTTOM**
LINE

"I thought that most of the materials in this folder were interesting, age appropriate, and very usable from an instructor's point of view."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Provides sources of information. Lists resources expressing opposing viewpoints.

Some case study information is dated.

Depth

Looks at underlying causes of problems. Employs different scales (local, regional, global). All concepts relate to urban problems.

Emphasis On Skills Building

Identifies skills used or developed in each lesson. Encourages investigation and critical thinking.

Action Orientation

Encourages involvement and action.

Weak on extensions of role play and other activities beyond the classroom.

Instructional Soundness

States goals and objectives for each activity. Provides extension activities. Interdisciplinary use of chemistry, biology, and sociology.

Lacks out-of-doors or field-based activities.

Usability

Materials well organized and easy to duplicate. Information is provided on procedures and equipment needed.

"The issues of who is using the energy and how to contain the wastes are done well."

"A must for any library - very good assessment of environmental problems and a good resource for teachers (even those with limited science backgrounds)."



Magical Migrating Monarchs:

A Program to Enhance Awareness
of Our Interactive Role in
the Environment



IN A NUTSHELL

Written by: Judith and Lisa
Levicoff

P.O. Box 212
Jenkintown, PA 19046

phone: (800) 385-9595
fax: (215) 576-1404

<http://mgfx.com/Butterfly Lady>

Cost: \$65.00

\$7.95 for *Monaca, The Magical
Migrating Monarch Activities Book*.

SUBJECTS

Fine Arts
Language Arts
Mathematics
Physical Education/Health
Science
Social Studies

This is an audiovisual, hands-on, interactive program created to introduce people of all ages to the mysteries of the monarch butterfly. Students learn how to plant a perennial butterfly garden that will attract and sustain monarchs, and have a first-hand opportunity to rear butterflies indoors from egg to adult. This curriculum includes instructional units on topics related to understanding of butterflies, such as habitat, metamorphosis, and migration. It also includes practical tips on gardening, raising and releasing, conservation, a glossary and list of resources. Provides charts, drawings and diagrams, as well as butterfly poems and opportunities for creative writing. A calendar of events is included to enable teachers to arrange different activities and supporting units throughout the year. An activity book with extra material is also available from the same author.

Grade Level

9-12

Length

124 pages

Date Published

1993

**THE BOTTOM
LINE**

"Full of valuable and accurate information...everything
you would need to know about Monarchs."

" 'Children' of all ages would be intrigued by the project."



Native American Gardening:

Stories, Projects and Recipes for Families



IN A NUTSHELL

Written by: Michael J. Caduto & Joseph Bruchac

Fulcrum Publishers
350 Indiana Street
Suite 350
Golden, CO 80401

phone: (800) 992-2908

fax: (800) 726-7112

e-mail: fulcrum@concentric.net

Cost: \$15.95 paperback

SUBJECTS

Fine Arts

Health

Language Arts

Science

Social Studies

This book is designed to serve as an introduction to the gardening practices of Native American civilizations by means of stories, traditions and actual practice in growing a garden. The information given covers everything from preparing soil and identifying harmful weeds to legends and teachings about the origins of plants and the customs surrounding gardens in different cultures. Activities include those associated with actual gardening skills (such as keeping a journal or composting) as well as native recipes, craft items and games involving native plants, and songs. The book also contains a pronunciation key for Native American words, a glossary and an index. The sections called "Bridges: From Legends to Life" draw connections between the stories and the activities. Illustrated with maps, drawings and black and white photographs.

Grade Level

K-adult

Length

158 pages

Date Published

1996

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"Excellent resource for information about Native Americans and flora in North America."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	THINGS TO CONSIDER
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Fairness and Accuracy	Models openness to inquiry and research.	References not clearly cited.
Depth	Some building of connections, e.g. helps foster an understanding of the interrelatedness of organisms in the ecosystem.	
Emphasis On Skills Building	In addition to practical skills of creating a butterfly garden, develops creative and critical thinking skills.	
Action Orientation	Promotes sense of personal responsibility. Encourages the learner to become involved.	
Instructional Soundness	Activities are learner-centered, hands-on, and involve different modes of learning (e.g. poetry, drama, experimentation).	
Usability	Information unlikely to go out of date. Includes sources of additional information. Materials can be adapted for language impaired learners.	

BEST COPY AVAILABLE

"If the children get involved in raising a monarch and growing a butterfly garden... they become personally involved with the butterfly and develop knowledge, appreciation, and skills for caring for these creatures."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Primary sources are used and referenced throughout. Material continuously challenges teacher and learner to consider different perspectives and to engage in inquiry.

Deals only with traditional culture; says little about Native Americans today.

Depth

Focuses on many concepts in natural and social sciences (in particular plant science and ecology) and at a variety of scales.

Emphasis On Skills Building

Stimulates both critical and creative thinking. Encourages students to compare, assess, and create own values.

Action Orientation

Thrust of curriculum is to instill a sense of personal connection to and responsibility toward nature and people.

Instructional Soundness

Includes section on sensitivity to different learning styles. Provides a variety of teaching techniques and settings. Activities are learner-centered and interdisciplinary. Clearly states goals for each activity.

Information needs to be streamlined to be age appropriate for younger children.

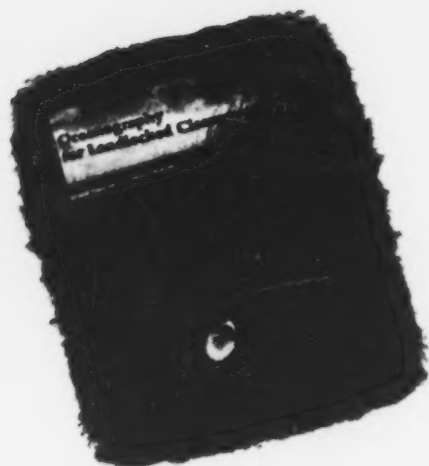
Usability

Material is well-indexed and well-organized by topic, subject and culture. There is a clear format with logical sequencing and helpful symbols. Provides additional resources.

Needs to be more specific about age range for each activity. Subject index misleading as some topics listed are only minimally addressed.

"This is the kind of book that makes me want to take a ten-year sabbatical just to explore!"

"A sense of personal place in the environment can be fostered with these materials."



Oceanography for Landlocked Classrooms



IN A NUTSHELL

Edited by: Gerry M. Madrazo, Jr. &
Paul B. Hounshell

National Association of
Biology Teachers
11250 Roger Bacon Dr. #19
Reston, VA 22090

phone: (800) 406-0775
(703) 471-1134
fax: (703) 435-5582
e-mail: nabter@aol.com

Cost: \$12.00 for NABT members.
\$15.00 for non-NABT members.

SUBJECTS

Language Arts
Mathematics
Science

This monograph discusses the question of making marine education interesting and meaningful in the classroom, especially in those located far from oceans or aquatic habitats, and also tries to provide the reader with some tools to do just that. The book includes chapters on such topics as technical considerations and resources for establishing and maintaining classroom aquaria, as well as fifteen activities designed to give students an understanding of marine biology, marine chemistry, geology, and physics. Some of the topics addressed in these activities include marine erosion, groundwater quality, and management of fishery populations. Each chapter is written by a different author, and formats for lessons vary. Nevertheless, each contains an explanation of the procedure, resources, follow-up activities, and illustrations or background, if necessary. Illustrations are diagrams, drawings, charts and woodcuts.

Grade Level
9-12

Length
104 pages

Date Published
1990

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"I used this publication myself; I find it to be
diverse and informative."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Written by a variety of science educators from many states. Topics are referenced to professional journals.

Could further develop diverse cultural perceptions of the sea. Most background information dates from the 1980s.

Depth

Encourages a multidisciplinary approach to topics. Activities overlap other science and social science areas. Helps students see long-term consequences and effects of what goes on in the ocean.

Emphasis On Skills Building

Encourages creative and critical thinking skills. Simulation allows students to apply skills and knowledge.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Encourages a variety of instructional methods. States goals for activities.

Lessons could better explain relevance of topics. Fails to address some ethical considerations regarding use of marine wildlife in education.

Usability

Activities are clear and procedures easy to follow. Guide contains a 14-page resource section which includes maps, books, software, fiction, etc.

Contains very few illustrations or diagrams. Aquarium materials could become prohibitively expensive.

"An excellent introduction to the many and varied issues of sea education."

"Provided a range of options to act as springboards for developing activities that are germane and feasible to a specific situation."



On Safari:

Animals and Their Habitats



IN A NUTSHELL

Written by: Heather McDonald

Creative Publications
5632 W. 115th Street
Alsip, IL 60482

Phone: (800) 624-0822
fax: (800) 624-0821
e-mail: www.mathland.com

Cost: \$28.95 with posters.
\$24.00 kit with animals.
\$46.00 for complete set.

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

This curriculum seeks to teach students about animals and their habitats through a series of interrelated activities. The central project involves the students in the construction of realistic three-dimensional models of animal habitats. Other activities include composing animal-inspired haiku, playing animal bingo, and researching and developing data tables about specific animals. Each of the thirty one lessons contains a sidebar which describes the nature of the activity, lists the preparation and materials needed, provides time requirements, and identifies learner goals. Assessment opportunities are highlighted for selected activities. The entire curriculum can be completed in six weeks, with 2-3 classroom hours per day spent on the activities. The text provides worksheets, evaluation materials, maps, and other form masters. Illustrations in the text are black and white drawings and maps; two full-color posters accompany the text.

Grade Level

2-3

Length

80 pages

Date Published

1996

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"Simple, straightforward, uncomplicated."

"The 'learner goals' appear to be consistently developed throughout the unit."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Encourages teachers to 'facilitate rather than dispense knowledge'.

Depth

Lessons span several disciplines. Emphasizes awareness.

Emphasis On Skills Building

Each lesson has specific learning goals. Challenges students to observe, research, measure, contrast, classify, and describe. Stresses creative skills.

Little integration of skills with action, or of analyzing data to reflect on environmental issues.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Addresses various learning styles. 'On Safari' unit is strong on research. Lessons are interdisciplinary and build on prior knowledge.

Instruction is mostly classroom centered. Other than one zoo trip, limited encouragement to use local resources. Primary emphasis on reading to acquire knowledge.

Usability

Well-written, organized, easy to use materials. Copyrights and copy permissions clearly provided. Gives list of recommended books and 800 number for additional information. Material is long-lived.

BEST COPY AVAILABLE

"The unit could benefit by including a trip to a local preserve or refuge and putting more emphasis on investigating native animals in addition to animals around the world."



Pablo Python Looks At Animals



IN A NUTSHELL

Bronx Zoo Education
Department
2300 Southern Boulevard
Bronx, NY 10460

phone: (800) 937-5131
fax: (718) 733-4460

Cost: \$250.00

SUBJECTS

Fine Arts

Language Arts

Physical Education/Health

Science

Social Studies

This curriculum tackles a number of common 'how' and 'why' questions about animals. It is organized around six basic animal attributes: sizes and shapes, textures and patterns, colors, sounds, styles of locomotion and feeding, and survival needs. The program consists of six illustrated student

books, forty eight activity sheets, a video cassette, an audio cassette, six classroom posters, a family handbook and a teacher's manual.

Exploration of these topics is through a combination of interactive activities, games, classroom work, and visits to a zoo or nature center. The teacher's manual describes each activity and lesson and provides student outcomes, materials needed, recommended teacher preparation, and procedure, as well as suggestions for use of the materials. The family handbook provides background information and questions to help parents teach children about animals. An aim and vocabulary are identified for each unit as well.

Grade Level

K-3

Length

290 pages +

Date Published

1994

**THE BOTTOM
LINE**

"Fun paper and pencil activity worksheets."

"Questions lead to how animals are connected and could be a starting point to discuss environmental issues."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

THINGS TO CONSIDER

Fairness and Accuracy

Lists researchers and information sources.

Individual topics are discussed from one perspective and/or one information source.

Depth

Each module has unifying theme and concepts. Includes animals from around the world. Material ties in science, math, language skills. Brings in some materials from other cultures.

Emphasis On Skills Building

Uses questions throughout. Provides ideas for learning and observing at a zoo.

Does not include skills for applying actions to issues.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Material is learner centered, uses a variety of ways of learning, and relates material to students' lives. States goals and objectives. Contains evaluation materials.

Usability

Lists additional materials, safety precautions, needed equipment, topics, background, extension activities. Material is long-lived and adaptable to numerous learning situations.

Needs an index and glossary of vocabulary words.

"Needs more first-hand experiences built in - more use of 'us' as animals, more animals that students may not be familiar with that they might find in the backyard."



Pond and Stream Safari:

A Guide to the Ecology of Aquatic Invertebrates



IN A NUTSHELL

Cornell University
Resource Distribution Center
#7BTP
Ithaca, NY 14850

phone: (607) 255-2080
fax: (607) 255-9946

Cost: \$14.00

SUBJECTS

Language Arts

Science

This field guide to aquatic insects goes beyond identification to include exploration activities and background information on life underwater. The intent of the program is to use the world of aquatic insects as a way to increase the student's interest in and awareness of pond and stream ecology. While not a curriculum as such, the field guide contains information on the lives of aquatic insects with explanations of metamorphosis, food chains and other ecological principles. It is accompanied by worksheets and handouts for seven related activities. The related activities include both indoor and outdoor lessons, and include games, specimen collection and language activities. All are followed by suggestions for discussion questions. It contains a leader's guide, worksheets, activity cards, checklist of and quick guide to common aquatic invertebrates. Text and worksheets include clear, detailed drawings of aquatic animals.

Grade Level
4-8

Length
56 pages

Date Published
1993

**THE BOTTOM
LINE**

"The materials are well designed and illustrated, but have a narrow focus."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Factually accurate.
Developed by faculty at Cornell University.

Depth

Focuses on concepts of environmental chemistry and ecology regarding aquatic invertebrates.

No conceptual framework. Lacks a strong connection between the importance of aquatic invertebrates and their environment.

Emphasis On Skills Building

Provides opportunities to develop identification and monitoring skills.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Uses a variety of methods: games, research, field study. Many activities are hands-on or involve outdoor teaching. Goals are stated for all activities.

Does not state learner outcomes or suggested forms of assessment.

Usability

Materials are easy to use and easily reproducible. Gives suggestions for making or finding low-cost material for activities.

Activity sheets are not in the same volume as activities and can easily be lost. Materials need to be adapted for use outside of the New York area.

"Ample background material on individual aquatic invertebrates, but relies on the educator's knowledge for information on concepts such as adaptation and food chains"



Project Learning Tree: Environmental Education Activity Guide



IN A NUTSHELL

American Forest Foundation
1111 19th Street, NW
Suite 780
Washington, DC 20036

phone: (202) 463-2462

Cost: Distributed in training workshop
which is free or requires a minimal charge.

SUBJECTS

Economics
Fine Arts
Language Arts
Mathematics
Physical Education
Science
Social Studies

Project Learning Tree is an interdisciplinary, comprehensive environmental education program that uses the forest as a "window" into the natural world. The activity guide is arranged into five major themes: diversity, interrelationships, systems, structure and scale, and patterns of change.

Each theme covers the areas of environment, resource management and technology, and society and culture.

Activities include an overview, background information, preparation instructions, suggested variations, and a sidebar with grade levels, subjects, skills involved, materials and time required. The themes are built on a conceptual framework, which is included in the text, along with a glossary, bibliography, and a variety of appendices. This program also includes an extensive workshop component, with more than 2000 workshops conducted annually across the country.

Grade Level
Pre K - 8

Length
402 pages

Date Published
1993

**THE BOTTOM
LINE**

"I am impressed with the organization and usability of these materials and the openness with which the issues are presented."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	OTHER CONSIDERATIONS
Fairness and Accuracy	Very fair and accurate. Presents a balance of different viewpoints. Encourages students to explore and develop their own opinions and values.	Could use more factual content and background information.
Depth	Wide variety of concepts presented in various contexts including historic and cultural. Presents local to global aspects.	
Emphasis On Skills Building	Focus on critical thinking skills. Students move through the stages of awareness, knowledge, challenge or consensus, and action.	
Action Orientation	Activities promote a sense of personal stake in the environment and the effects of action.	
Instructional Soundness	Interdisciplinary and constructivist in approach. Clearly states goals and objectives and includes options for assessment. Provides for diverse learning styles. Extensive evaluation conducted.	
Usability	Format makes objectives and concepts easy to identify. Pages are reproducible. Needed materials are simple and inexpensive. Cites additional resources.	

"A wide variety of activities... something for everyone!"

"One of the greatest strengths I saw in these materials was its encouragement of students to explore and pursue in an effort to form their own opinions."



Project Seasons:

Hands-on Activities for Discovering the Wonders of the World



IN A NUTSHELL

Written by: Deborah Parrella

Shelburne Farms
Shelburne, VT 05482

phone: (802) 985-8686

fax: (802) 985-8123

Cost: \$24.95

SUBJECTS

Fine Arts

Language Arts

Mathematics

Science

Social Studies

This book contains more than 100 hands-on, interdisciplinary activities relating to conservation, agriculture and natural science. Each is designed either to stand alone or to be a part of a series of activities. The activities are divided according to the three seasons of the school year and are further arranged by topic (such as soil, snow, animals & tracks). Each activity lists appropriate grade level, group size, materials needed, time required and objectives. Includes form masters, charts, worksheets, index and bibliography. Frequent sidebars and notes provide additional information and explain vocabulary or special terms. Activities cover a variety of subject areas, including writing, different types of experiments, songs, games, crafts, and conducting research. The text is illustrated with drawings. Teacher training is available through the program's developers at their site in Vermont.

Grade Level
Pre K-6

Length
318 pages

Date Published
1995

**THE BOTTOM
LINE**

"This book is a compendium of solid, basic activities designed to present a substantive overview."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Resources are referenced. Many opportunities to explore viewpoints. Openness to inquiry shown by "detective" method.

Diversity of viewpoints presented, but only touched on.

Depth

Concept organization is appropriate to age levels.

Emphasis On Skills Building

Presents opportunities for creative and critical thinking, interpersonal and group skills, data collection.

Little emphasis on application of skills to issues.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Activities are learner-centered and well connected to students' lives. Many opportunities for exploring different teaching styles. Groupings of lessons allow for building on previous knowledge.

Usability

Adaptable, long-lived, and easy to read. Laid out for basics and divided seasonally.

Some materials may be difficult to acquire.

"Good activities for grasping some hard-to-comprehend concepts (e.g. One in a Million)."

"Fun skills! Makes science exciting."



Project WET:

Curriculum & Activity Guide



IN A NUTSHELL

This is a collection of activities dealing with water and its importance to society. The activities cover aspects as diverse as molecular structure and physical properties, resource management, politics, and social contexts. Each lesson contains a sidebar which describes grade level, subject areas, time required, setting, skills, "charting the course" (which identifies other related activities) and vocabulary. The lessons consist of a summary, objectives, materials, making connections (which explains the relevance and rationale of the lesson), background information, procedure, assessment, extensions, and a list of resources. Seven skills are identified in the framework: gathering, organizing, analyzing and interpreting information; applying learned information; evaluating application of learned information; and presenting evidence of learning from application and evaluation processes. Illustrations consist of photographs, maps, charts and drawings.

Grade Level

K-12

Length

516 pages

Date Published

1995

Project WET
201 Culbertson Hall
Montana State University
Bozeman, MT 59717-0575
phone: (406) 994-5392
fax: (406) 994-1919
e-mail: rwwet@msu.oscs.montana.edu

Council For Environmental Education
5555 Morningside Drive, Suite 212
Houston, TX 77005
phone: (713) 520-8008

Cost: Distributed in training workshop which is free or requires a minimal charge.

SUBJECTS

Fine Arts
Health
Language Arts
Mathematics
Science
Social Studies

**THE BOTTOM
LINE**

"The materials follow an interdisciplinary approach, so time is spent on science and language arts and social studies."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Information appears thorough and well researched. Reflects subject matter throughout history, giving national information and different viewpoints. Diverse ethnic groups represented in activities.

Depth

Concepts cover a variety of topics. Background sections are thorough and present concepts and define terminology.

Emphasis On Skills Building

Materials develop seven specific skills, which are identified for each activity.

Could use more critical thinking skills at lower grade levels.

Action Orientation

Action is both group oriented ("Dilemma Derby") or individual ("The CEO"). Most "Wrap Up and Extension" activities suggest action.

Few examples of action activities for lower grades.

Instructional Soundness

Activities are mindful of different learning styles. Each activity is identified by developmental level and is related to learner's life. Goals and objectives are clearly stated.

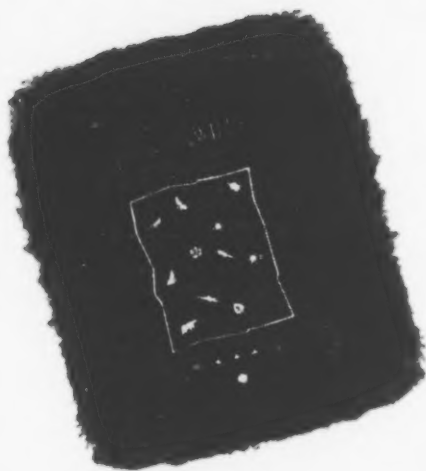
Usability

Layout is clear and logical, with appendices and suggestions for assessments and expanded study. Many are adaptable to different age groups and communities.

Difficult to photocopy due to binding.

BEST COPY AVAILABLE

"The information... helps to give credibility to environmental education. We are not just 'tree huggers' anymore. The addition of assessment opportunities is especially exciting and timely."



Project WILD

K-12 Activity Guide



IN A NUTSHELL

Council for Environmental
Education
5430 Grosvenor Lane
Bethesda, MD 20814
phone: (301) 493-5447
fax: (301) 493-5627
e-mail: natpwild @igc.apc.org

Cost: Distributed in training
workshop which is free or requires
a minimal charge.

SUBJECTS

Economics
Fine Arts
Language Arts
Mathematics
Physical Education
Science
Social Studies

Project WILD is designed to be "an interdisciplinary, supplementary conservation and environmental education program emphasizing wildlife". Each of the 113 activities in this book can be conducted either individually, with other *WILD* activities, or as part of an existing curriculum or unit. Activities are grouped in seven subject areas by theme: awareness and appreciation; diversity of wildlife values; ecological principles; management and conservation; people, culture and wildlife; trends, issues and consequences; and responsible human actions.

Each lesson includes objectives, method, background, materials, procedure, extensions, and evaluation. Information is also provided to explain the age range, subjects covered, skills involved, time required, group size recommended, setting, references to the program's conceptual framework, key vocabulary, and relevant appendices. Appendices include the conceptual framework, lists of activities by grade level and subject, and guides for use of animals in classrooms, and other reference material.

Grade Level
K-12

Length
386 pages

Date Published
1992

**THE BOTTOM
LINE**

"Addresses real-life issues which concern us all."

"Subject matter needs to be presented so that students
can understand both sides of an issue."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Activities are field tested and reviewed by professionals in different fields. Some activities utilize role play to help students understand differing perspectives.

Some information is outdated and does not reflect recent developments or changes in technology or practice.

Depth

Activities are presented within a clear conceptual framework. Addresses ethical, cultural and economic issues and relationships.

More specific information is needed for some lessons. Focus of some activities seems narrow.

Emphasis On Skills Building

Age-appropriate activities encourage participants to use critical thinking and problem solving skills and to develop own conclusions.

Action Orientation

Many activities encourage or simulate action on genuine and topical issues.

Could benefit from more ideas for local projects.

Instructional Soundness

Allows for building on concepts if used in organized curriculum. Heavy emphasis on critical thinking, learner participation, and helping students draw own conclusions.

Usability

Contents are cross-referenced by age, topic, skills, concepts, subjects, and location, and contain a glossary and index. Activities are adaptable and lend themselves to discussion and review.

"One of the easiest books to find activities that fit certain objectives, concepts, etc...Good supplement for a curriculum in environmental education."



Rainforest Researchers



IN A NUTSHELL

Tom Snyder Productions
80 Coolidge Hill Road
Watertown, MA
02172-2817

phone: (800) 342-0236
fax: (617) 926-6222

Cost: \$249.95 for 1 copy.
\$349.95 for 5 copies.

SUBJECTS

Mathematics

Science

Social Studies

This program promotes the use of student teams to study plant biology, ecology and problem solving skills as they relate to tropical rainforests. The software is specifically designed to be used either by an entire classroom of students or by teams of four working at multiple computers. Students assume the roles of chemists, ecologists, ethnobotanists and taxonomists as they analyze rainforest issues and problems. Students focus on the skills and expertise of their particular role to explore one of two rainforest problems. Each adventure is divided into seven turns to help pace the activities for groups. The entire package includes CD-ROM (for both Macintosh and Windows), a brief introductory videotape, a 124-page teacher's guide which includes additional activities and masters for handouts and assignments, a starter kit of worksheets, and twenty-eight student booklets (seven for each role). The program is designed to involve two to four weeks of class time.

Grade Level

5-8

Length

CD-ROM

Date Published

1996

**THE BOTTOM
LINE**

"The program can be used simply as a computer simulation or more in-depth with related topics and activities."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

For the most part, presents a balance of different viewpoints. Seems to address all sides of issues.

Based on the belief that people are destroying the rainforest and that it will be gone if something is not done.

Depth

Materials are interdisciplinary and encourage looking at issues from several professional perspectives.

Does not address underlying political issues in country of study (Indonesia).

Emphasis On Skills Building

Strong on critical thinking and decision making skills.

The program can praise wrong answers, so teachers may want to help students analyze their problem solving process.

Action Orientation

Role play encourages learners to have a sense of responsibility.

Instructional Soundness

Strong emphasis on team decision making. Sets goals and objectives. Relates material to learner's lives.

Students are sometimes given false positives which they may find confusing.

Usability

Easy to use. Provides support materials and extended activities. Relates to National Science Education Standards in "Science as Inquiry", "Life Sciences", and "Science in Personal and Social Perspectives" for middle school students.

"This program is highly interactive and interdisciplinary, allowing students to solve problems independently as well as collaboratively."

"Uses excellent story line; very relevant, exciting, and exotic."



Mindscape
88 Roland Way
Novato, CA 94949

phone: (415) 897-9900
fax: (415) 897-2747

Cost: \$69.95 for teacher's edition.
\$129.95 for 5 CD-ROM
classroom set.

SUBJECTS

Science
Social Studies

The San Diego Zoo Presents... The Animals!



IN A NUTSHELL

This CD-ROM features photographic and audio displays of over 200 animals and their habitats. Information includes still photographs, movies, descriptive paragraphs, and maps. Program begins with a very clear narrated instruction on how to use the software. Accompanying booklet is brief and addresses use of the software. The material does not include lesson plans or curriculum guide, but focuses on information.

Grade Level
K-12

Length
CD - ROM

Date Published
1995

THE **BOTTOM**
LINE

"Good information about zoos and the diversity in their goals and objectives. Since it's put together by a zoo, however, I wonder if it is slanted."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Presents challenges faced by zoos.

Does not address arguments against zoos.

Depth

Links individual animals/exhibits to global biomes. Cites some historical connections (e.g. consumer boycotts).

Emphasis On Skills Building

No real skill development; does not get beyond presentation of information.

Action Orientation

Includes "Action Alerts" which describe actions students can take and lists organizations to contact for current information.

Instructional Soundness

Information cross-referenced. Material attempts to make connections to learner's life. Uses combination of photos, videos, and audios to present data.

Does not provide goals or objectives.

Usability

Very user friendly. Contains both adult and children's versions.

Even children's version had an emphasis on reading long paragraphs.

BEST COPY AVAILABLE

"I think it's important that students understand the value of zoos as an educational center and not just a place to see unique animals."

"A valuable resource - a 'living' animals and biome encyclopedia."



Science Sleuths Volume I:

The Mysteries of the Blob and the Exploding Lawnmower



IN A NUTSHELL

VideoDiscovery
1700 Westlake Avenue North,
Suite 600
Seattle, WA 98109-3012

phone: (800) 548-5400
(206) 285-5400
fax: (206) 285-9245
website: www.videodiscovery.com

Cost: \$79.00

SUBJECTS

Language Arts

Science

This is the first of a two-volume series of mysteries that combine life, earth and physical science concepts with a variety of problem solving techniques. The mysteries are real-life puzzles involving biological, chemical, physical and ecological principles. Each mystery has six different solutions that become more intricate as students progress. Students record and edit information in their electronic notebook, then print reports for assessment by a teacher.

Solution times vary from twenty minutes to several class periods.

The material exists in CD-ROM or laserdisc and includes video interviews, stills, graphs, tables, maps, charts, an electronic notebook and interactive on-screen tools. Materials also include challenge worksheets, glossary, encyclopedia and crossword puzzles.

Grade Level

6-9

Length

CD-ROM

Date Published

1995

*Note: Materials available in Macintosh-CD or Windows-CD.

**THE BOTTOM
LINE**

"Very effective problem-solving strategies!
Strongly presents science exploration in a very
interesting format."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Data is from identified, current sources. Encourages exploration. Presents numerous viewpoints.

Characters represent stereotypes.

Depth

Students able to explore complexities of issues.

Emphasis On Skills Building

Uses research skills, critical thinking, observation and data analysis. Requires learners to listen to all sides of an issue.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Lists clear goals and objectives. Provides self-assessment and assessment software for teacher. Highly interactive.

Little connection to everyday life. Student answers must correspond to the letter or program answers or are counted as wrong.

Usability

Has a logical layout and a high-quality interface. Can be adapted to different levels. Technical assistance is available via a toll-free number.

BEST COPY AVAILABLE

"Uses many tools students may be unfamiliar with - like melting a substance to test it... More scientifically based but the two mysteries are environmental problems."

"Materials are clearly written and highly motivational."



Sea Search



IN A NUTSHELL

Moanalua Gardens Foundation
1352 Pineapple Place
Honolulu, HI 96819-1754

phone: (808) 839-5334
fax: (808) 839-3658
e-mail: mgf@pixi..com

Cost: \$49.95

SUBJECTS

Health
Mathematics
Science
Social Studies

This CD-ROM program teaches about the world of marine biology by involving students in solving "The Mystery of the Devastated Dinners". Students must gather information from a variety of individuals in the program to solve the mystery. Learners progress to upper levels after successfully researching issues. The feature called "teacher talk" provides instructors with step-by-step instructions for conducting laboratory experiments and other projects on science topics related to the story. Another feature is the "good thinker's tool kit" which supplies students with instructions for problem solving and critical thinking. This software also provides a library of over 300 images and sounds of tropical marine life for use in multimedia presentations. The program includes information on working with students whose native language is not English. Materials are also available in Spanish.

Grade Level
3 - 10
Length
1 CD ROM
Date Published
1996

**THE BOTTOM
LINE**

"The 'Good Thinker's Tool Kit' could be used by several students at once; partnering would help the less visual or slower reader, as there is a large amount of reading involved."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Represents different viewpoints from a diverse group of people. Contains strong emphasis on inquiry and data collection.

Depth

Concepts are taught in context and then expanded upon. Range of items is great, despite narrow focus.

Emphasis On Skills Building

Teaches research, problem solving, critical and creative thinking skills through mystery portion.

Action Orientation

Includes strong action-oriented philosophy.

Problem is global in significance but specifics are very local to Hawaii.

Instructional Soundness

Has interdisciplinary approach. Learner controls action.

Does not appear to address multiple intelligences. Most, but not all, information is obtained through reading.

Usability

Easy to use, clear, and logical format. Material is long-lived and engaging.

Provides limited instructional support. Can frustrate learners by requiring extended answers before allowing them to advance to next step.

BEST COPY AVAILABLE

"Detailed information presented embedded in an engaging activity.
You don't realize that you are picking up facts, too."

"Encourages you to gather information from several sources before making a decision."



SimFarm:

School Edition



IN A NUTSHELL

Maxis
2121 North California Blvd.
Suite #600
Walnut Creek, CA 94596

phone: (510) 933-5630
fax: (510) 927-3581
(800) 336-2947

Cost: \$44.95

SUBJECTS

Science
Social Studies

This program provides a computer simulation of the particulars of managing a modern farm. Students can select geographical regions, crops to be grown, terrain, and otherwise control the difficulty of the program. The materials take into account the variables of technology, plant types, weather, prices, and other factors. The package includes software, teacher's guide, and a 140-page user's manual which includes instruction in the use of the program, reference information on specific crops and on farming in general, a glossary and index. The teacher's guide provides background information, "Jumping In" questions for discussions, objectives for specific simulations, recommended off-computer learning, worksheets, connections to interdisciplinary teaching, and suggested enrichment activities. Guides are illustrated with screens from the program to help students work through the sessions.

Grade Level
10 & up

Length
CD-ROM

Date Published
1993

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"A well-produced program. The quality of learning will depend upon the skill with which the facilitator can coordinate users and program."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Helps students understand the farmer's perspective.

Does not provide option of alternative farm technologies.

Depth

Addresses different concepts such as economics, weather, soil nutrient levels.

Weak on interactions between agriculture and wildlife.

Emphasis On Skills Building

Incorporates critical thinking skills, analysis, long-term planning, handling range of possible solutions and options.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Program is multidisciplinary.

Program could be very frustrating for those not familiar with farming. Learner is only given aerial view of farm.

Usability

Provides technical support. Program can be used repeatedly using different variables for different experiences.

Layout of material is confusing to some.

BEST COPY AVAILABLE

"The concepts involved to set up a farm are a little too confusing for younger students to grasp... Visual presentation was mediocre."

"...May provide an experience that is as close to real life as an urban user may get."



Terrarium Habitats

Teacher's Guide



IN A NUTSHELL

By: Kimi Hosoume

GEMS
Lawrence Hall of Science
University of California,
Berkeley
Berkeley, CA 94720-5200

phone: (510) 642-7771

Cost: \$13.50

SUBJECTS

Language Arts

Mathematics

Science

The activities in this brief guide are designed to help teachers derive the maximum educational value from a classroom terrarium. The activities are sequenced to begin with a study of soil, progress to a discussion of habitat, and from there to introduce progressively more complex life forms. Specific activities include conducting soil tests, observing animals and biological processes, recording information, suggestions for introducing children to earthworms and other terrarium inhabitants, and actually constructing the habitats. The authors make frequent reference to other existing environmental curricula as extensions or supports of this material. Includes worksheets, lesson outlines, lists of needed materials and additional resources, extensions, diagrams, and suggestions for environmentally related songs. Also lists summaries of the five principal activities and cites related children's literature about the species highlighted.

Grade Level

K-6

Length

84 pages

Date Published

1994

*Data sheets are also available in Spanish.



**THE BOTTOM
LINE**

"Allows for continuity of activities for a year or semester-long project. Builds well on past activities."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Clearly states reviewers and contributors.

Depth

Does not challenge students to think beyond the terrarium or to use the activities to understand the 'real world'.

Emphasis On Skills Building

Emphasizes creative writing, observation and description.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Activities are hands-on for use with students' different learning styles. Allows for long-term observation.

Does not state goals or objectives.

Usability

Materials are simple. Instructions are easy to follow.

BEST COPY AVAILABLE

"If you want to teach children soil science without having to get heavily into science, this is a great little book."

"The material has a narrow scope but it covers it well enough to be useful."



Understanding Earth



IN A NUTSHELL

VideoDiscovery
1700 Westlake Ave., N.
Suite 600
Seattle, WA 98109-3012

phone: (800) 548-3472
(206) 285-5400
fax: (206) 285-9245
web site: www.videodiscovery.com

Cost: \$495.00 (laserdisc)
\$99.00 (CD-ROM)

SUBJECTS

Health
Language Arts
Mathematics
Science
Social Studies

This videodisc curriculum is composed of twelve lessons covering major issues of earth science and geology. Material is designed to be appropriate for classrooms, small groups, and individuals. It uses the "engage, explore, and apply" learning model. The presentation corresponds to the W. H. Freeman *Understanding Earth* textbook. Topics covered include earthquakes, floods, the structure of minerals, use of mineral resources, and understanding geologic time frames. Contains a teacher's manual (with answer keys), a student manual, and videodisc directory. Each lesson contains an overview, learning objectives, a statement of concepts and themes, prerequisites, related lessons, teaching steps, assessment, extensions, resources, and student worksheets. Extensions listed in teacher's manual suggest activities where students analyze real (or simulated real) data.

Grade Level
9-12

Length
Videodisc

Date Published
1994

Note: Materials also available in CD-ROM version for the Macintosh.

BEST COPY AVAILABLE

THE BOTTOM LINE

"Lots of content. Would be really useful if you had the equipment to run laserdiscs but didn't have a library or many other materials."

What The REVIEWERS Said!

KEY CHARACTERISTICS

STRENGTHS NOTED

OTHER CONSIDERATIONS

Fairness and Accuracy

Lessons on floods and mining do address human impacts on earth, and raise questions (e.g. whether floodplain farmers should be compensated for losses due to flooding).

Human side of geological events (e.g. floods) not always addressed or given same quality of discussion.

Depth

An in-depth and comprehensive treatment of earth science.

Emphasis On Skills Building

Fosters observation, reasoning, practice in lab tests. Comprehension skills are addressed and utilized throughout the assessments.

Action Orientation

N o t A p p l i c a b l e

Instructional Soundness

Excellent for visual learners. Learning can take place at student's own pace.

Visual only. Does not encourage tactile or other learning approaches.

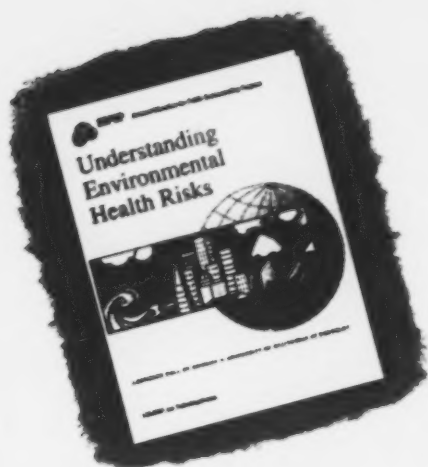
Usability

Material is long-lived. Very usable.

BEST COPY AVAILABLE

"How are you supposed to learn about the hardness scale of minerals from pictures?"

" A helpful supplement to instruction and investigation."



Understanding Environmental Health Risks

Teacher's Manual



IN A NUTSHELL

SEPUP
distributed by: Sargent Welch
P.O. Box 5229
Buffalo Grove, IL 60089

phone: (800) 727-4368
fax: (800) 676-2540

Cost: \$19.99 teacher's manual.
\$129.99 for entire module.

SUBJECTS

Health
Mathematics
Science
Social Studies

This curriculum consists of ten lessons designed to explain chemicals, their properties and their uses in the context of societal issues. Activities include readings, laboratory experiments and practice in calculations. Each activity contains an overview, a statement of purpose, a list of materials needed, preparation instructions, information on the time required, and teacher background information. Also provided are a conceptual overview, student worksheets, sample answers (when appropriate) to questions in student worksheets, transparency masters, a glossary, research summary, and further instructions on the preparation of solutions used in the experiments. Activities are designed to encourage students to collect and process scientific evidence and use it to make decisions regarding environmental health. Sample issues raised include pesticide residue, diseases in impure water, and toxicity levels of carcinogens.

Grade Level
9-12

Length
107 pages

Date Published
1995

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"All experiments are very well stated, easy to conduct and easily applied to students' daily lives."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	OTHER CONSIDERATIONS
Fairness and Accuracy	Students run experiments and develop own conclusions. Information is balanced and science-based.	Some data and information needs to be updated.
Depth	Describes local, regional, national and global aspects of water quality.	
Emphasis On Skills Building	Includes decision making, issue identification, comparing risks and benefits.	Less emphasis on creative thinking.
Action Orientation	Some activities encourage learners to examine personal behavior.	
Instructional Soundness	Material is very learner-centered. Clearly states goals, objectives, and outcomes. Encourages learner participation.	Material could benefit from a greater variety of activity types.
Usability	User friendly, well laid out. Materials easy to use/copy/purchase. Instructions clear and complete. Some enrichment activities provided.	Does not provide pre-or post activities. Alternatives to equipment not mentioned.

BEST COPY AVAILABLE

"I would recommend this booklet to a science teacher who was conducting experiments on water quality. This booklet should not be the only material used to teach the unit, though."



A World In Our Backyard:

A Wetlands Education and Stewardship Program



IN A NUTSHELL

Environmental Media
Corporation
P.O. Box 99
Beaufort, SC 29901

phone: (800) 368-3382
web site: www.envmedia.com

Cost: \$29.95 video
\$16.95 guide
\$39.95 both

SUBJECTS

Fine Arts
Language Arts
Mathematics
Science
Social Studies

This curriculum addresses the importance of wetlands, discusses wetland biology, ecology and hydrology and encourages the use of local wetland sites for study and stewardship. The curriculum can be used for a three-to five- day study unit at school, a unit studied throughout the school year, or as foundation for an ongoing service project or club. It consists of a teacher's guide and a twenty four minute videotape with separate sections introducing the unit to students and teachers. The text is enhanced by twenty seven student activities of various types including roleplays, hands-on experiments, map work, microscopic investigations, service projects, and games. The 144-page guide includes drawings, charts, maps, student worksheets, photographs, evaluation forms, references for further study, and a bibliography.

Grade Level
6 - 8
Length
144 pages
Date Published
1993

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"The materials are designed for New England but could be adapted throughout the U.S."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	OTHER CONSIDERATIONS
Fairness and Accuracy	Information is well-documented and reviewed by a variety of individuals. Activities promote inquiry and investigation. Diversity evident in both layout (diverse children shown in outdoors) and content (research on wetlands from student's country of origin).	
Depth	Activities are attentive to local, national and international scales. Addresses both simple and complex aspects of issues.	Does not include conceptual framework.
Emphasis On Skills Building	Provides opportunities for developing critical and creative thinking skills, investigation and field work skills.	
Action Orientation	Conveys the idea that individual actions count. Starts with awareness and builds to action. Strong action orientation, providing a range of strategies for student involvement.	Actions are fairly superficial (e.g. litter pickup, placing signs).
Instructional Soundness	Activities include diverse sensory involvement, encourage learner participation, and expand the learning environment to the out- of-doors. Goals, objectives and concepts clearly stated.	Includes few assessment opportunities and instructions.
Usability	Materials are well written and easily duplicated. Includes helpful resource and reference list.	Includes few ideas for adapting materials.

BEST COPY AVAILABLE

"Background information is thorough and gives teachers who are unfamiliar with wetlands a good base from which to start."



WOW!

The Wonders of Wetlands:

An Educators Guide



IN A NUTSHELL

Environmental Concern Inc.
210 West Chew Ave. P.O. Box P
St. Michaels, MD 21663
(410)745-9620 fax: (410)745-3517
or

The Watercourse
201 Culbertson Hall,
Montana State University
Bozeman, MT 59717-0057
(406)994-5392 fax: (406)994-1919

Cost: \$14.95

SUBJECTS

Economics
Fine Arts
Language Arts
Mathematics
Science
Social Studies

This is a collection of forty three activities on the study and appreciation of wetlands. It is designed primarily for classroom teachers, but is suitable for park rangers, interpreters, and others. Based on the concept that "Wetlands are powerful places in which to learn", these activities cover numerous aspects of wetlands, from their biology and diversity to economic and political issues. The activities are grouped under six main headings allowing for special attention to be given to such topics as water, plants, animals, and soil. Each activity is tagged for grade level, skills, and themes, and lists related activities and extensions. Activities are cross-referenced and arranged for units of varying length with different grade levels. Contains a planning guide, extensive background information for teachers, student pages, a glossary, an index to the sidebars, and a list of additional references. Illustrations are drawings, charts, diagrams and black and white photographs.

Grade Level	K-12
Length	330 pages
Date Published	1995

BEST COPY AVAILABLE

**THE BOTTOM
LINE**

"The most comprehensive introduction to wetland issues and definitions that I have seen."

What The REVIEWERS Said!

KEY CHARACTERISTICS	STRENGTHS NOTED	OTHER CONSIDERATIONS
Fairness and Accuracy	Provides historical context for wetland policies, attitudes and issues. Encourages data collection and individual analysis of information and values.	Insufficient coverage of differing viewpoints.
Depth	Provides a worldwide, multicultural focus on wetland issues. Integrates many fields of science and relates issues to learners' lives.	
Emphasis On Skills Building	Many activities address problem-solving, experiment design, scientific method, evaluation of data. Includes both group and individual activities.	
Action Orientation	Includes unit on "Helping Wetland Habitats". Most activities promote responsibility and suggest actions for learners to take.	Activities do not connect wetland to water use or water conservation.
Instructional Soundness	Activities are interdisciplinary and involve a variety of teaching styles. Clearly spells out goals and assessments. Provides excellent background information.	Needs more pictures and detailed illustrations.
Usability	Well organized and adaptable. Includes helpful planning guide, resource lists, and descriptions of target age groups.	

BEST COPY AVAILABLE

"In order to get the most out of it, a teacher would have to spend a lot of time reading and organizing."

"Needs inservice to teachers because of its broadness."

Reviews In Brief

The materials which follow are of similar quality and value to those in the previous section, and were reviewed using the same criteria. The only difference is that these materials do not contain a substantial teacher's guide. As a result, a shorter review format is more appropriate.

The following reviews are provided to allow individual educators to make their own decisions about the materials and to determine how they can best be used.



The Amazon Trail



IN A NUTSHELL

MEEC
The Learning Company
One Aphenaeum Street
Cambridge, MA 02142

phone: (800) 685-6322
(612) 569-1500

Cost: \$29.95
also available in lab packs

SUBJECTS

Health
Science
Social Studies

This hybrid CD-ROM for Macintosh and Windows is an educational adventure game which leads students through the rainforest to locate an indigenous tree which is the source of a cure for malaria. Students can obtain information on the rainforest, its flora, fauna and indigenous cultures by clicking on different items on the screen. The 25-page guidebook provides information on more than 60 species of animals and plants, as well as diseases, peoples, and items needed for trade and survival. Participants are provided with rations for their journey, which they must budget and use throughout the game. Students' scores (for locating and photographing different species) are recorded in the form of pictures on Mayan shields. Also contains a list of rainforest activities and age-appropriate reading, as well as information on what students would find if they were "really" in the rainforest.

Grade Level
4-12
Length
CD-ROM
Date Published
1993

What the REVIEWERS Said !

The program emphasizes planning and data collection and provides a general introduction to the Amazon rainforest. Although it included different cultures in the game, different perspectives on nature were not included. Instructions were not always clear. The material had only a modest connection to environmental issues and does little to connect the activities or topics to everyday life. Because of the similarity to another computer simulation game, the educational purpose is easily lost.

STRENGTHS / THINGS TO
NOTED / CONSIDER



Discover the World:

**Empowering Children to
Value Themselves, Others
and the Earth**



IN A NUTSHELL

Edited by Susan Hopkins &
Jeffrey Winters
New Society Publishers
4527 Springfield Ave.
Philadelphia, PA 19143

phone: (800) 333-9093

Cost: \$14.95

SUBJECTS

Fine Arts
Language Arts
Physical Education
Social Studies

This is a handbook designed to help teachers, parents and others develop children's awareness of the world and of ways to cooperate with others. It is multicultural in focus and includes information on numerous cultures and nationalities. Activities include crafts, recipes, art, music and history of different peoples. A heavy emphasis is placed on teaching children conflict resolution and awareness of the rights of others. Environmental concerns are largely covered in the chapters "Appreciation of the Environment", which includes information on water conservation and building a terrarium; "Special Calendar Days", which includes Earth Day; and "Current Events", which discusses the Alaskan oil spill. The resource section includes lists of organizations involved in environmental and peace movements.

Grade Level

Pre K - 6

Length

158 pages

Date Published

1990

STRENGTHS / OTHER
NOTED / CONSIDERATIONS

What the REVIEWERS Said !

Since the book was published in 1990, some of the information is or could soon become dated. Additionally, the book is only able to give information on a limited number of ethnic groups. Nevertheless, reviewers were pleased with the resource lists, the attention given to social responsibility, the integration of activities across subject areas and the use of a conceptual framework.



Ideas For Environmental Education

In the Elementary Classroom



IN A NUTSHELL

Written by: Kath Murdoch
Heinemann

361 Hanover Street
Portsmouth, NH
03801-3912

phone: (800) 541-2086

(603) 431-7894

fax: (800) 847-9039

Cost: \$20.00

SUBJECTS

Fine Arts

Language arts

Mathematics

Science

Social Studies

This is the North American edition of a text originally published in Australia. It is designed to offer teachers an array of interdisciplinary activities related to environmental education. Included are chapters on taking students outdoors to maximize appreciation of nature, empowering students to take personal action, clarifying values, establishing a 'green classroom', and locating resources. Attention is given to the need for a whole school approach to enable teachers and school officials to practice what they preach. Each activity lists a purpose, curriculum links, skills, preparation and procedure. One chapter deals specifically with evaluation. Materials include illustrations, worksheets, masters, reference lists, suggestions for assessment and program planning, and an index.

Grade Level

K-8

Length

194 pages

Date Published

1993

What the REVIEWERS Said !

STRENGTHS / THINGS TO
NOTED / CONSIDER

Reviewers found that the main ideas, summaries, time requirements, and interdisciplinary connections were clearly stated. It incorporates action components which are usually omitted from materials for lower grade levels. More than one reviewer encouraged all teachers to have a copy. Although this is the North American edition, some of the activities involve such creatures as wombats, dingoes and platypus. Some reviewers found the layout to be a waste of paper.



Imagine A Green Tomorrow:

A Visual Learning Environmental Project Guide



IN A NUTSHELL

Polaroid Education Program
575 Technology Square-4
Cambridge MA 02139

phone: (800) 430-0737

Cost: Available only through
a workshop.

SUBJECTS

Fine Arts
Science
Social Studies

This pamphlet contains seventeen photography activities designed to "help students link vision with action, to make a difference in their communities". The activities are grouped according to six themes: exploring, recording, expressing, communicating, motivating, and imagining. Each activity is structured to include an aim, a description of the activity, a description of the product/action, and a materials list. Activities involve photography as well as planting gardens, protecting historic sites, contacting environmental officials and developing pen pal networks. The phrase "I can" is found repeatedly throughout the book. The booklet itself is illustrated with color photographs and multicolored lettering.

Grade Level

K-12

Length

22 pages

Date Published

1990's

STRENGTHS / OTHER
NOTED / CONSIDERATIONS

What the REVIEWERS Said !

Activities are suggested in ways that do not bias students towards one position or another but encourage exploration, research and individual decision making. Many activities are general or vague enough to allow them to be used in most communities and geographic locations. Does not state appropriate level for activities, provide follow-up resources or background information for teachers. No conceptual framework described. Cost of film could be prohibitive to some schools.



The Kid's Guide To Service Projects:

Over 500 Service Ideas for
Young People Who Want to
Make a Difference



IN A NUTSHELL

Written by: Barbara Lewis

Free Spirit Publishing
400 1st Avenue North,
Suite 616

Minneapolis, MN 55401

phone: (800) 735-7323

fax: (612) 337-5050

e-mail: help4kids@ freespirit.com

Cost: \$10.95

SUBJECTS

Health

Language Arts

Science

Social Studies

This small book contains over 500 service project ideas on a number of topics. It includes a unit on environmental concerns as well as related information on animals and health. Eight projects are listed under the heading of "Environment", and focus on planting trees and recycling. The introductory chapter provides suggestions on making projects successful such as conducting research, doing prior planning and conducting evaluations afterward. The final chapter addresses "how-to's" such as fund-raising, press releases, and opposing laws. The book is written to children, not their teachers. Students are encouraged to learn about issues, develop their own opinions and to explore local resources.

Grade Level

6-12

Length

176 pages

Date Published

1995

What the REVIEWERS Said !

STRENGTHS / THINGS TO
NOTED / CONSIDER

Reviewers found it to be comprehensive, easy to read, a useful resource material and a helpful tool for motivating students. The text promotes a sense of personal responsibility and encourages both local and global actions. The reviewers also noted that the book offered more ideas than information on how to implement those ideas. More types of activities for environmental issues would be helpful.



Likeable Recyclables:

Creative Ideas for Reusing Bags, Boxes, Cans, and Cartons



IN A NUTSHELL

Written by: Linda Schwartz

The Learning Works
P.O. Box 6187
Dept. NEIC
Santa Barbara, CA 93160

phone: (800) 235-5767

(805) 964-4220

fax: (805) 964-1466

Cost: \$9.95

SUBJECTS

Fine Arts

This book is a collection of craft projects which allow students to reuse waste materials. The text is divided into sections dealing with the different media used: 'Boxes', 'Bottles & Cans', and 'Bags, Cups, Tubes & More'. The book begins with a list of items to save for reuse, as well as a list of tools and materials. Suggestions are given for general projects and actions such as how to cover a tube or to make papier-mâché. Some projects also have variations listed. Projects range from toys to decorations to practical items such as desk organizers. The language is simple, the print large and clear. Illustrations (drawings) are provided throughout to make the projects easier to understand.

Grade Level

K-3

Length

128 pages

Date Published

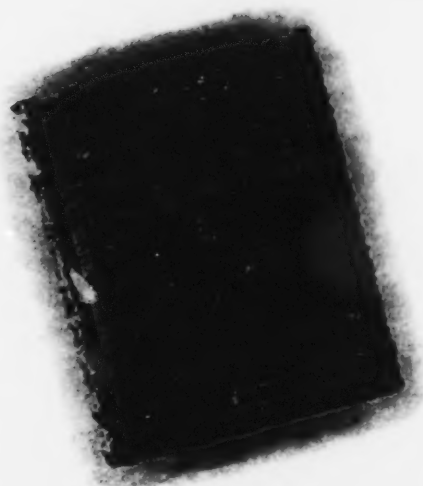
1992

STRENGTHS / OTHER
NOTED / CONSIDERATIONS

What the REVIEWERS Said !

The emphasis here is on imagination. Uses very clear and simple lesson plans which are easy to follow. Employs tactile and visual styles. Could be a valuable resource in conjunction with other materials. Although safety is addressed in the introduction, some of the crafts may be unsafe. Misidentifies reusing as recycling. Furthermore, when one paints on or glues to a recyclable object (e.g. a can or bottle), it is no longer recyclable!

The Environmental Education Collection - Resources for Educators Volume 116 **BEST COPY AVAILABLE** 111



Marine Biology:

An Introduction to Ocean Ecosystems, Student Book



IN A NUTSHELL

Written by: Amy Hill

J. Weston Walch Publisher
P.O. Box 658
Portland, ME 04104-0658

phone: (800) 341-6094

(207) 772-2846

fax: (207) 772-3105

Cost: \$20.95

SUBJECTS

Science

This is a student textbook on marine biology. Each of the fourteen chapters discusses a different habitat or aspect of ocean biology, including islands, coral reefs, estuaries, arctic seas, and the ocean floor. One chapter deals specifically with environmental ethics. The text addresses some current environmental issues, such as global warming and endangered species. The book is illustrated with numerous color photographs and black and white drawings. The text is punctuated with questions for the student to consider and answer, including essay questions in which the student is to develop or express an opinion about a topic.

Important concepts are bolded and pronunciation offered for vocabulary words. The book includes an index, glossary, and list of further resources.

Grade Level

8-12

Length

128 pages

Date Published

1995

What the REVIEWERS Said !

STRENGTHS / THINGS TO
NOTED / CONSIDER

The book is primarily informational and includes no activities other than discussion questions. The photography is excellent and the text concise. There is a high level of factual accuracy and an emphasis on interdependent relationships between organisms and the ecosystem. There are many opportunities to extend investigations. Provides questions for review. Questions asking the student to reflect about human interaction with habitats and creatures exist throughout the text.



Science in the Marketplace



IN A NUTSHELL

Written by: Florence G. Korchin

Tiger Publications, Inc.
32 Friendship Court
Red Bank, NJ 07701

phone: (908) 747-9042

fax: (908) 747-5922

Cost: \$35.00

SUBJECTS

Economics

Health

Mathematics

Science

This book contains more than 60 interesting science experiments which children can do involving everyday consumer items such as shampoos, sweeteners and bleach. Written in a textbook format, the book comes with a course outline that lists topics, activities, and objectives. It can also serve as a resource book and can be used as a supplement to a science curriculum or as a source of ideas for high school students. Activities list purpose, materials needed, general directions, procedure, questions, and suggested activities (geared more for teachers). Each of the sections is followed by a lengthy supply of questions for testing comprehension. Includes an index and materials list. Illustrated with drawings and diagrams.

Grade Level

7-12

Length

380 pages

Date Published

1995

STRENGTHS / OTHER
NOTED / CONSIDERATIONS

What the REVIEWERS Said !

Reviewers felt that the book was comprehensive and noted that subjects were easy to find. Although a science textbook, some information was provided about issues (e.g consumerism, action groups). However, some expressed concern that safety was not stressed more, despite the use of potentially dangerous chemicals in some of the experiments. Note that although household materials are used, experiments do require scientific equipment (scales, microscopes, beakers).



Simple Things You Can Do To Save Energy:

The Power is in Your Hands



IN A NUTSHELL

The Noodlehead Network
107 Intervale Avenue
Burlington, VT 05401

phone: (800) 639-5680

e-mail: noodlhed@together.net

web site: www.noodlehead.com

Cost: \$ 89.00 including public
performance rights.

SUBJECTS

Science

This brief but amusing video shows several simple things that students can do to conserve electrical energy in their own homes. Young actors and actresses demonstrate low-cost and no-cost ways to save energy in the kitchen, living room, bathroom, bedroom and basement of a home. As the intent is to be entertaining, the video is lively and creative, using clever characters (a comic book hero named Draft Girl, an explorer named Indiana Jane), humorous situations (a game show called Family Fridge) and special effects (light bulbs that talk). While there is no teacher's guide or list of supportive activities, an energy audit checklist for students or adults to use at home accompanies the video. The video also provides reasons for children to be concerned about saving energy and gives suggestions for influencing adults.

Grade Level

3-6

Length

15 minutes

Date Published

1993

What the REVIEWERS Said !

Children are involved in all phases of the production. Material is entertaining, engaging, short, and to-the-point. No teacher's guide is provided for the energy audits, so teachers are encouraged to develop a familiarity with energy audits on their own. Acting is described as "corny" in places, which might limit the appropriate audience to even younger children.

STRENGTHS / THINGS TO
NOTED / CONSIDER



Songbird Story



IN A NUTSHELL

Produced by: Laura Heller

Bullfrog Films, Inc.

P.O. Box 149

Oley, PA 19504

phone: (610) 779-8226

fax: (610) 370-1978

e-mail: bullfrog@lgc.org

web site: www.bullfrogfilms.com

Cost: \$195.00 to purchase.

\$25.00 for a 30-day rental.

SUBJECTS

Science

This 13-minute video features a story about two children exploring the world of migratory birds. It includes an animated segment where the two of them travel (by means of avian flight) to South America to visit the birds' wintering grounds and meet with people there. As a result, the children learn of the threats to migratory birds caused by habitat destruction. The video is accompanied by a brief teacher's guide which provides a synopsis of the video, background information about migration and the environmental concerns affecting migratory birds, suggestions for pre-activities and post-activities, a selection of fun facts about birds, a resource list, and ideas for extensions including suggestions for construction of simple birdfeeders.

Grade Level

K - 6

Length

13 minutes

Date Published

1994

STRENGTHS / OTHER
NOTED / CONSIDERATIONS

What the REVIEWERS Said !

Introduces concepts of interrelatedness and habitat destruction. Uses children to model interest in birds and wildlife. Demonstrates global impacts of human actions. Characters reflect some ethnic diversity. Characters ask "what can I do?" (modeling sense of personal responsibility), without being given answers. Information is sometimes given without examples and in quick succession.

Title & Page #	Grade Level	Subjects							Medium		
		Economics	English / Lang. Arts	Fine Arts	Health / Physical Ed.	Mathematics	Science	Social Studies	Multimedia	Video	Print
Always A River.....pp 10 - 11	K - 12	•	•	•	•	•	•	•			◊
Amazon Trail, The.....p 104	4 - 12	•			•		•	•	◊		
Aquatic WILD.....pp 12 - 13	K - 12		•	•	•	•	•	•			◊
At Home With The Sun.....pp 14 - 15	K - 6						•	•			◊
Biodiversity Basics.....pp 16 - 17	6 - 9	•	•				•	•			◊
Biology On A Shoestring.....pp 18 - 19	9 - 12						•				◊
Building Block Chemistry pp 20 - 21	9 - 12				•		•				◊
Child's Place: Caring For.....pp 22 - 23	4		•	•		•	•	•			◊
Child's Place... Protecting Soil.....pp 24 - 25	2		•	•		•	•	•			◊
Community Connections.....pp 26 - 27	6 - 9		•	•		•	•	•			◊
Conservation Biology.....pp 28 - 29	11 - 12					•	•	•			◊
Cycles For Science Series.....pp 30 - 31	9 - 12					•	•			◊	◊
Discover A Watershed.....pp 32 - 33	6 - 12		•	•		•	•	•			◊
Discover The World.....p 107	Pre K - 6		•	•	•			•			◊
EM*Power! pp 34 - 35	6 - 9		•	•			•	•			◊
Energy, Economics, & pp 36 - 37	6 - 8	•					•	•			◊
Environmental Chemistry.....pp 38 - 39	9 - 12				•	•	•	•			◊
Envir. Ed. In the Schools.....pp 40 - 41	K - adults	•	•	•	•	•	•	•			◊
Envir. Science Field Laboratory...pp 42 - 43	9 - 12	•	•			•	•	•	◊		◊
Everything To Know.....pp 44 - 45	4 - 12		•				•	•			◊
Global Environmental Change.....pp 46 - 47	9 - 12	•				•	•	•			◊
Global Systems Science Series...pp 48 - 49	9 - 12	•	•			•	•				◊
Great Ocean Rescue (The).....pp 50 - 51	5 - 8					•	•	•	◊		◊
HELP! Help Nature Works.....pp 52 - 53	4 - 6		•	•		•	•	•			◊
Ideas For Envir. Education.....p 108	K - 8		•	•		•	•	•			◊
Investigating & Evaluating STS.....pp 54 - 55	6 - 12	•	•			•	•	•			◊
Imagine A Green Tomorrow.....p 109	K - 12			•			•	•			◊
Kids' Guide To Service Projects.....			•				•	•			◊

Atmosphere (Weather, Climate & Quality)	Aquatic	Biodiversity	Ecology	Energy	Env. Issues	Forests & Other Plants	Population	Resource Management	Social Action	Solid Waste	Wildlife	Topics	Price	Title
													\$16.00	Acid Rain
	✓				✓			✓					free	Always A River
			✓			✓		✓			✓		\$29.95	Amazon Trail, The
	✓	✓	✓		✓			✓	✓		✓		varies w/ wkshp	Aquatic WILD
				✓				✓					\$7.95	At Home With The Sun
		✓	✓		✓		✓		✓		✓		not determined	Biodiversity Basics
	✓										✓		\$35 / \$29	Biology On A Shoestring
	✓		✓										free	Building Block Chemistry
	✓	✓		✓				✓	✓		✓		\$55.00	Child's Place... Caring For Aquatic
			✓			✓		✓	✓	✓	✓		\$45.00	Child's Place.. Protecting Soil
			✓		✓				✓	✓	✓		\$11.91/14.07	Community Connections
		✓	✓		✓			✓	✓				\$49.90	Conservation Biology
✓	✓				✓				✓	✓			\$56.00	Cycles For Science Series
✓	✓	✓	✓		✓	✓		✓			✓		\$15.95	Discover A Watershed
					✓				✓	✓			\$14.95	Discover The World
✓	✓				✓			✓	✓	✓			\$15.00	EM*Power!
✓	✓			✓	✓			✓	✓	✓			\$ 8.00	Energy, Economics, & The Env
✓	✓			✓	✓			✓	✓	✓			\$10.95	Environmental Chemistry
✓	✓	✓	✓		✓	✓		✓	✓	✓			\$17.50/ \$22.00	Envir. Ed. In the Schools
	✓			✓	✓			✓		✓			\$395.00	Envir. Science Field Lab.
													\$9.95	Getting To Know
		✓	✓		✓	✓		✓	✓				\$11.66/\$12.95	Global Environmental Change
													not determined	Global Systems Science Ser.
✓	✓		✓		✓			✓	✓	✓	✓		\$149.00	Great Ocean Rescue (The)
													\$26.00	HELP - How Nature Works
			✓	✓	✓	✓	✓		✓	✓	✓		\$20.00	Ideas For Envir. Education
													varies w/ wkshp	Investigating & Evaluating STE
	✓	✓			✓	✓			✓	✓	✓		w/ wkshp	Imagine A Green Tomorrow
													ST 101	Kids Guide To Service Projects

Title & Page #	Grade Level	Subjects								Medium		
		Economics	English / Lang. Arts	Fine Arts	Health / Physical Ed.	Mathematics	Science	Social Studies	Multimedia	Video	Print	
Learning About Insects.....pp 56 - 57	7 - 12						*		◇			
Let's Reduce and Recycle.....pp 58 - 59	K - 12	*	*	*		*	*	*				◇
Likeable Recyclables.....p 111	K - 3			*								◇
Living Lightly In The City.....pp 60 - 61	K - 3		*	*	*	*	*	*				◇
Living Lightly On The Planet.....pp 62 - 63	10 - 12		*			*	*	*				◇
Magical Migrating Monarchs.....pp 64 - 65	9 - 12		*	*	*	*	*	*				◇
Marine Biology.....p 112	8 - 12						*					◇
Native American Gardening.....pp 66 - 67	K - adult		*	*	*		*	*				◇
Oceanography For Landlocked...pp 68 - 69	9 - 12		*			*	*					◇
On Safari.....pp 70 - 71	2 - 3		*	*		*	*	*				◇
Pablo Python Looks @ Animals...pp 72 - 73	K - 3		*	*	*		*	*				◇
Pond and Stream Safari.....pp 74 - 75	4 - 8			*		*						◇
Project Learning Tree.....pp 76 - 77	Pre K - 8	*	*	*	*	*	*	*				◇
Project Seasons.....pp 78 - 79	Pre K - 6		*	*		*	*	*				◇
Project WET.....pp 80 - 81	K - 12		*	*	*	*	*	*				◇
Project WILD.....pp 82 - 83	K - 12	*	*	*	*	*	*	*				◇
Rainforest Researchers.....pp 84 - 85	5 - 8					*	*	*	◇	◇		◇
San Diego Zoo Presents.....pp 86 - 87	K - 12						*		◇			◇
Science In The Marketplace.....p 113	7 - 12	*			*	*	*					◇
Science Sleuths Volume 1.....pp 88 - 89	6 - 9		*			*	*		◇			
Sea Search.....pp 90 - 91	3 - 10				*	*	*	*	◇			
SimFarm.....pp 92 - 93	10 & up	*				*	*		◇			
Simple Things You Can Do.....p 114	3 - 6						*					◇
Songbird Story.....p 115	K - 6						*			◇		
Tamarrum Habitats.....pp 94 - 95	K - 6		*			*	*					◇
Understanding Earth.....pp 96 - 97	9 - 12		*		*	*	*	*	◇			
Understanding Envir. Health.....pp 98 - 99	9 - 12				*	*	*	*				◇
World In Our Backyard(A).....pp 100 - 101	6 - 8		*	*		*	*	*		◇		◇
WOW! The Wonders of.....pp 102 - 103	K - 12	*	*	*		*	*	*				◇

Atmosphere (Weather, Climate & Quality)	Aquatic	Biodiversity	Ecology	Energy	Env. Issues	Forests & Other Plants	Population	Resource Management	Social Action	Solid Waste	Wildlife	Topics	Price	Title
			✓								✓		\$145.00	Learning About Insects
					✓			✓	✓	✓			free	Let's Reduce and Recycle
											✓		\$9.95	Likeable Recyclables
			✓	✓	✓	✓			✓	✓	✓		\$22.00	Living Lightly In The City
			✓	✓	✓		✓	✓	✓	✓	✓		\$22.00	Living Lightly On The Planet
			✓			✓					✓		\$65.00/\$7.95	Magical Migrating Monarchs
	✓	✓	✓		✓						✓		\$20.95	Marine Biology
			✓			✓		✓		✓	✓		\$15.95	Native American Gardening
			✓					✓			✓		\$12.00/\$15.00	Oceanography For Landlocked
			✓					✓			✓		\$28.95 / 46.00	On Safari
			✓								✓		\$250.00	Pablo Python
	✓		✓								✓		\$14.00	Pond and Stream Safari
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		varies w/ wkshp	Project Learning Tree
	✓		✓			✓		✓		✓	✓		\$24.95	Project Seasons
					✓			✓	✓				varies w/ wkshp	Project WET
	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		varies w/ wkshp	Project WILD
													\$249.95	Rainforest Researchers
		✓	✓		✓			✓	✓		✓		\$69.96	San Diego Zoo Presents
				✓	✓								\$35.00	Science In The Marketplace
	✓			✓						✓	✓		\$79.00	Science Sleuths Volume 1
	✓		✓			✓							\$49.95	Sea Search
✓	✓					✓		✓			✓		\$44.95	SimFarm
													\$89.00	Simple Things You Can Do
		✓	✓		✓	✓					✓		\$195/\$35	Songbird Story
											✓		\$13.50	Terrarium Habitats
✓	✓			✓	✓						✓		\$495/\$99	Understanding Earth
													\$19.99	Understanding Envir. Health
	✓		✓		✓	✓		✓		✓	✓		\$39.95	World In Our Backyard(A)
	✓		✓		✓	✓		✓		✓	✓		\$14.95	WOW! The Wonders

FEEDBACK FORM

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Bora Simmons
Northern Illinois University, Department of Curriculum and Instruction, DeKalb, IL 60115

National Project For Excellence in Environmental Education

What does it mean to be environmentally literate? **The National Project for Excellence in Environmental Education**, initiated by the North American Association for Environmental Education (NAAEE) in 1993, is attempting to answer that question. Environmental education is a process that aims to develop an environmentally literate citizenry that can compete in our global economy, has the skills, knowledge and inclinations to make well-informed choices, and exercises the rights and responsibilities of members of a community.

Through the **National Project for Excellence in Environmental Education**, NAAEE is taking the lead in establishing guidelines for the development of balanced, scientifically accurate, and comprehensive environmental education programs. Quality environmental education programs facilitate the teaching of science, civics, social studies, mathematics, geography, language arts, etc. These guidelines will help educators develop meaningful environmental education programs that integrate across and build upon the high standards set by the core disciplines.

The **National Project for Excellence in Environmental Education** is a multi-year program designed to identify and provide examples of high quality environmental education practice. The Project is focusing on four interrelated efforts:

1. publication of *Environmental Education Materials: Guidelines for Excellence*;
2. creation of a series of educators' resource guides to quality environmental education materials (*The Environmental Education Connection - A Review of Resources for Educators* is the first in this series);
3. development of environmental education learner guidelines; and
4. development of a set of recommendations for the preparation and continuing education of teachers and other environmental educators.

The **National Project for Excellence in Environmental Education** is being funded by the U.S. Environmental Protection Agency through the Environmental Education and Training Partnership (EETAP) -- plus the National Environmental Education and Training Foundation, the National Fish and Wildlife Foundation, Northern Illinois University and World Wildlife Fund. For more information, please contact Bora Simmons, Northern Illinois University, Department of Curriculum and Instruction, DeKalb, Illinois 60115.

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